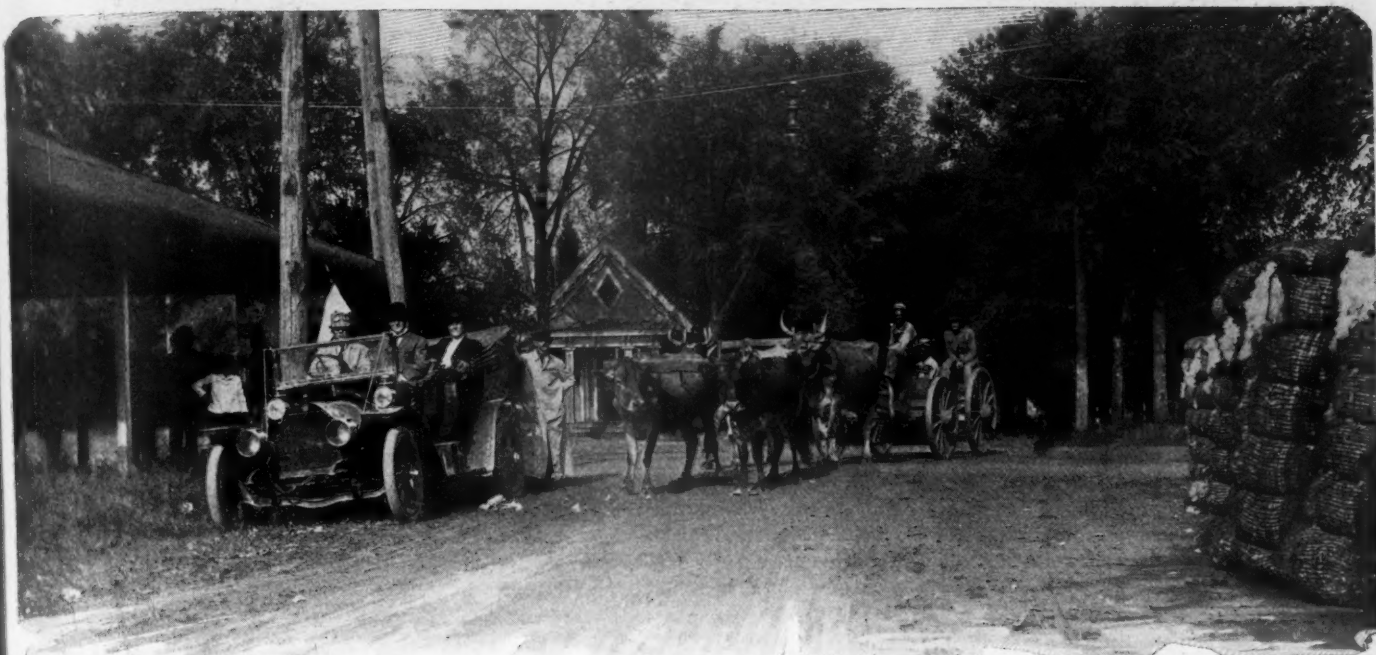


# MOTOR AGE



PATHFINDER IN LOUISVILLE—PRIMITIVE METHOD OF TRANSPORTATION BY OXEN AS EMPLOYED IN MANY INTERIOR COUNTIES

## Second Leg of National Trail Routed



SAVANNAH, GA., Oct. 25—From New York to Atlanta is the first leg of the national highway which is being laid out from Gotham to Jacksonville, Fla. It passes through Philadelphia, 99 miles; Gettysburg, 219; Staun-

ton, Va., 398.9; Roanoke, Va., 490.9; Winston-Salem, N. C., 616.7; Charlotte, N. C., 754.3; Greenville, S. C., 871.6; Commerce, Ga., 981.4; Atlanta, Ga., 1,062.9. The second leg of the national highway is from Atlanta to Savannah, the route for which was laid out recently when a scout car was sent out from Savannah.

The mission of the car was not only to map out the way for the endurance run November 5, but to outline a route which would be the official road of the motorists from Atlanta to the sea.

The route of the car lay over historic ground. It followed, as it were, the changes in the capitals of the state, beginning at Savannah, where Oglethorpe first landed and settled the commonwealth of Georgia, passing through Louisville, the second capital, then on to Milledgeville, the capital at the time of the war between the states, and where the ordinance of the secession of Georgia from the union was passed, and ending at the present capital.

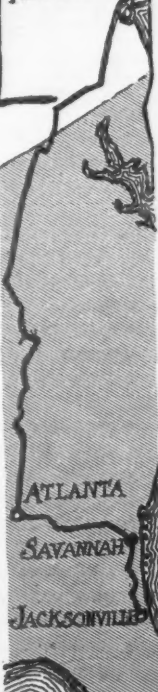
So well was the work of the pathfinder performed



By J. F. Bernhardt



NEW YORK



that on its return after a week's leisurely trip over the 600 miles

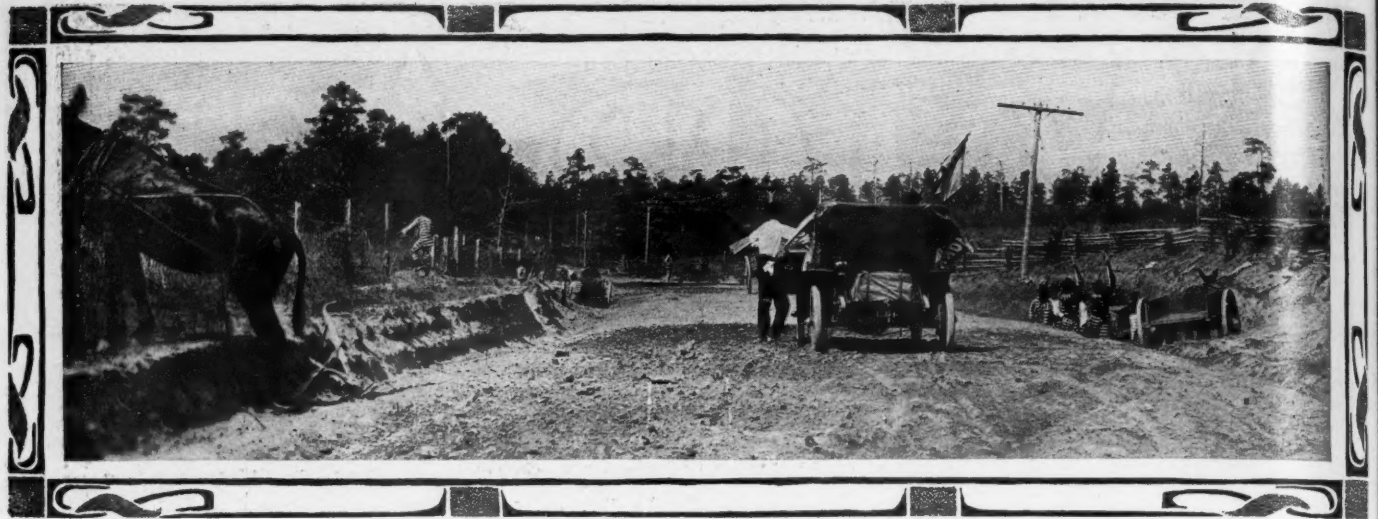
which comprised the journey the executive committee accepted the recommendation made by those who drove the car, and made the route the official one.

The route from Savannah to Atlanta is 289 miles.

Former tourists in Georgia have had much of an uncomplimentary nature to say of the roads in the interior of the state. Whether these things were entirely true at the time depends much on the route taken by the tourists. It is safe to say that were they to take their trips over again, no matter which way they traveled, they would find much to praise in the Georgia roads. During the year Georgia has changed her convict system, doing away with the leasing of convicts to private concerns and turning them over to the counties. This has resulted in tremendous interest in the building of good roads, and the tourist through Georgia these days finds few counties which are not making rapid progress in the building of better highways.

The pathfinding Chalmers-Detroit car of the Savannah Automobile Club found some bad roads in its trip from the levels of Chatham to the foothills of Fulton, but it also found fine boulevards, and more of them building. In fact the worst roads found were those





VISIBLE EVIDENCE OF WORK THAT IS BEING DONE ON ROADS BY SOUTHERNERS

which were being torn up by the road gangs.

In counties where good roads have been an unknown thing before, some of the most magnificent road operations imaginable are under way. Great hills are being cut through, and valleys filled up. Roads are being leveled and graded like a railroad right of way, and wide, splendidly-paved thoroughfares are taking the place of the sandbeds of former days. Georgia has awakened in earnest in regard to its roads. Public officials are studying the science of road-building, the pick and scraper are found on every hand, and miles and miles of paved roads are stretching away from the towns and hamlets, toward the cities, and the cities are sending out its boulevards to meet them.

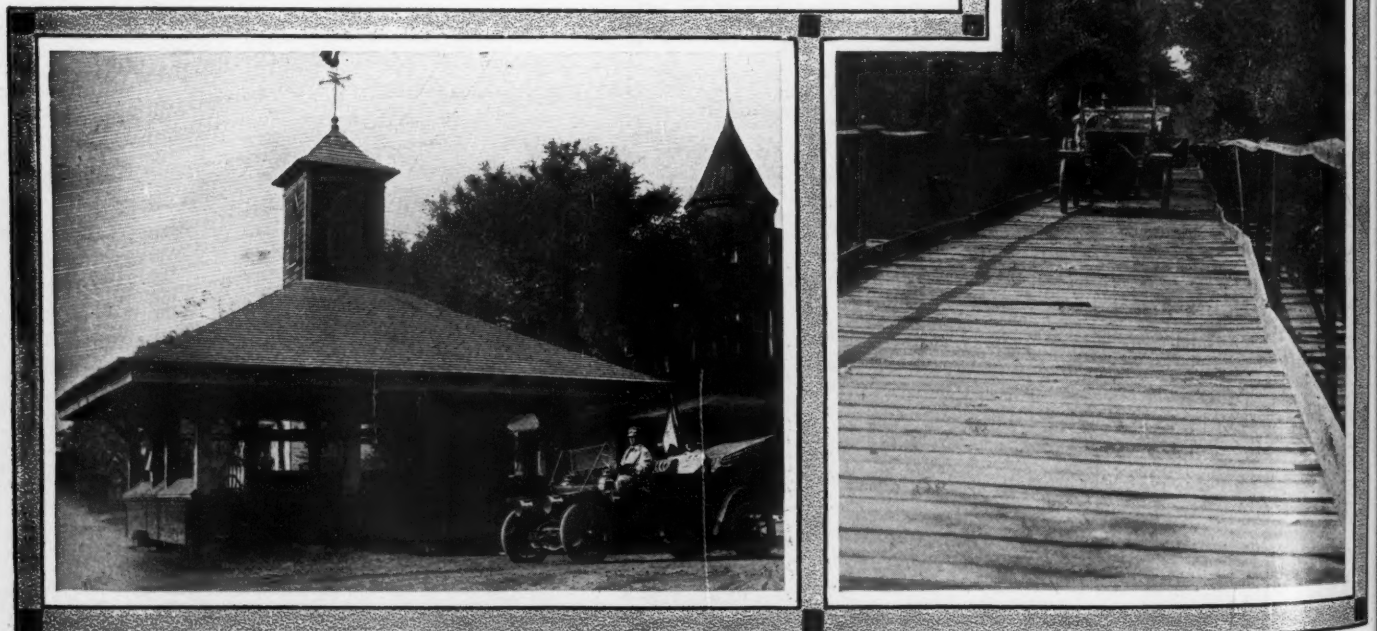
In view of the endurance run to be held under the supervision of the Savannah Automobile Club, and promoted chiefly by the Savannah Morning News and the Atlanta Constitution, the greatest activities are now along the line of the capital route,

thus accomplishing the chief purpose of the run. The greatest activities in road building are found in the more northerly counties of the state, though it is not confined there by any means. Leaving the good roads of Chatham the pathfinders found the roads comparatively unimproved for the first 20 miles, and consisting of a goodly proportion of sandbeds. After that when the vicinity of Statesboro, in Bulloch county, was reached great interest in the roads was manifest. A well-paved highway stretching for 10 miles on each side of the town, gave the pathfinders a chance to let the car out. Not another stretch of comparatively poor roads was found until the border of Jenkins county was reached. Here the convicts were found working the roads, and many miles of fine highway were gone over. Jenkins county, though only 3 years old, is setting a pace for some of the older counties in the building of fine roads. Roads which may only be regarded as fair were found on the run through Burke county and until

the border line of Jefferson was reached.

In Jefferson the first real clay roads were seen for the first time on the trip. Jefferson has been at its road-building for some time and carries off the palm in the matter of improved highways, having easily the best of all the fourteen counties traversed on the way to Atlanta.

From Jefferson on to Atlanta the building of new roads was found almost at every step. Hardly would the sight of one road gang be lost before another would come into view. Through Washington



AT LOUISVILLE, ONLY REMAINING SLAVE MARKET—BRIDGE OVER OGECHEE RIVER





PATHFINDER CHALMERS CAR ON ITS WAY FROM SAVANNAH TO ATLANTA

Baldwin, Putnam, Morgan and Newton counties magnificent highways are being constructed with convict labor. In Rockdale, DeKalb and Fulton counties the road gangs are busy, but have completed their work on the capital highway, and it is good work too.

Starting in the lower portion of the state at Savannah, the route goes across the state in a northwesterly direction, and passes almost every sort of surface and scenery. From the sandy bottom of the first portion of the trip the road mounts

higher until Stone mountain near Atlanta is reached with its rocky environs. Many long hills are found, but most of these have been cut through to afford an easy road for the motorists, which they are sure to appreciate.

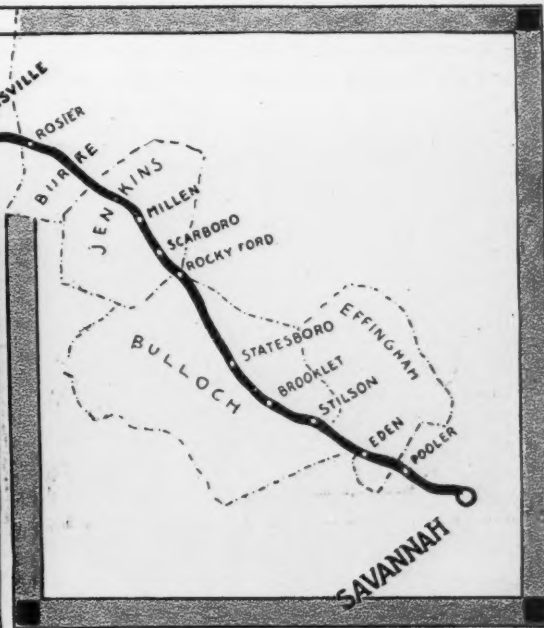
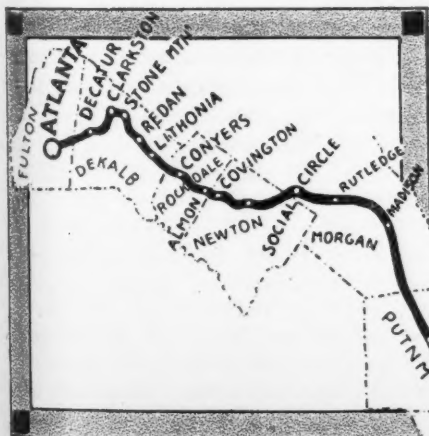
The run can easily be made in 2 days. In fact the Savannah club has mapped out a schedule which calls for speeds averaging from 15 to 16 miles an hour for the contestants, and allows them 2 days in which to make the trip, spending the night at Milledgeville. The contestants will be divided into three classes, those of \$1,250 and under, cars from \$2,000 down to \$1,250 and cars above \$2,000.

The run is going to be a very pleasant one, every convenience having been arranged along the way to make it so. The Savannahians remembering their pleasant relations with the Automobile Club of America in the running of the grand prize race, has invited the officials of the A. C. A. to be their guests on the run. It is probable some will accept.

Distances on the Savannah-Atlanta leg are announced as follows:

	Miles
Savannah to Pooler.....	9.8
Pooler to Eden.....	9.1
Eden to Stilson.....	15.6
Stilson to Brooklet.....	10.7
Brooklet to Statesboro.....	8.8
Statesboro to Rocky Ford.....	17.0
Rocky Ford to Scarborough.....	4.0
Scarborough to Millen.....	8.5
Millen to Rosier.....	22.1
Rosier to Louisville.....	10.2
Louisville to Davisboro.....	12.5
Davisboro to Sandersville.....	12.5
Sandersville to Milledgeville.....	28.6
Milledgeville to Eatonton.....	19.8
Eatonton to Madison.....	24.6
Madison to Rutledge.....	8.9
Rutledge to Social Circle.....	7.5
Social Circle to Covington.....	11.5
Covington to Conyers.....	11.5
Conyers to Lithonia.....	6.9
Lithonia to Ridan.....	8.5
Ridan to Stone Mountain.....	5.2
Stone Mountain to Clarkston.....	5.1
Clarkston to Decatur.....	4.0
Decatur to Atlanta.....	8.0

The third leg of the proposed national highway, that from Savannah to Jacksonville, has been laid out. The distance is 169 miles and the route runs through Dorchester, Julinton, Ridgeville, Darien, Ents, Brunswick, Southern Junction, Owen's Ferry, King's Ferry and Callahan.



ROAD-BUILDING IN JEFFERSON COUNTY—NEW YORK-SAVANNAH ROUTE



MITCHELL CAR, PACEMAKER IN NEW YORK-ATLANTA RUN

## "On to Atlanta" the Motoring Cry

NEW YORK, Oct. 25—Atlanta, the center of the awakening south, is the goal of forty-seven cars which left New York today, prepared for a 10-days' struggle with roads of the best and worst, and all the intermediate varieties. Under the auspices of the New York Herald and the Atlanta Journal these pioneers, the advance guard, it is hoped, of many thousands, have undertaken to blaze the touring way between the metropolis of the north and that of the south, enduring what hardships may befall for the sake of the motorists' watchword, good roads.

At 9 o'clock of the bright autumn morning Herald square flaunted bunting and pennants from three-score cars, and a solid line stretched up Sixth avenue in the shadow of the elevated tracks. Then the escorting cars of the New York Automobile Trade Association swept down Broadway, and the waiting column turned into their wake. Not until Fifth avenue was reached did the line reveal its full length; then, freed from the press of traffic, it

drew up in close order, still ten blocks long, and charged for the Battery.

Unusual in a tour of this sort, and indicative of the interest and enthusiasm with which the south has taken up the good roads movement, are the many entries by cities along the route and by their boards of trade or commerce. Atlanta, Lynchburg, Va.; Charlotte, N. C.; Roanoke, Va.; Moultrie, Ga.; Anderson, Ga.; Spartansburg, S. C.; Winston-Salem, N. C., and Commerce, Ga., all find representation in the line. The contesting entrants follow:

### CLASS 1, COSTING \$4,001 OR MORE

- 4—Thomas, J. J. Woodside, Atlanta, Ga.
- 6—Stearns, W. L. Peel, Atlanta, Ga.
- 17—Thomas, J. Lee Barnes, Atlanta, Ga.
- 22—Oldsmobile, Henry J. Lamar, Jr., Atlanta, Ga.
- 23—Thomas, Charles I. Ryan, Atlanta, Ga.
- 30—Renault, Renault Selling Agency, New York.
- 35—Matheson, Matheson Automobile Co., New York.
- 44—Benz, Chamber of Commerce, Atlanta, Ga.
- 49—Apperson, Automobile Blue Book, New York.

### CLASS 2, COSTING FROM \$3,001 TO \$4,000

- 9—Thomas, Mrs. Elizabeth de Giers, New York.

- 38—Pope-Toledo, Chamber of Commerce, Lynchburg, Va.
- 48—White, Walter C. White, New York.
- 54—Franklin, W. C. Cleveland, Greenville, S. C.

### CLASS 3, COSTING FROM \$2,001 TO \$3,000

- 20—Premier, City of Charlotte, N. C.
- 25—Pennsylvania, Sales Agency, Atlanta, Ga.
- 34—Knox, W. A. Kelly, New York.
- 39—Selden, Evelyn Harris, Atlanta, Ga.
- 46—Oldsmobile, E. B. Douglas, Miami, Fla.
- 52—Corbin, Chamber of Commerce, Roanoke, Va.
- 53—Oldsmobile, Frederick Weiss, Brooklyn, N. Y.

### CLASS 4, COSTING FROM \$1,251 TO \$2,000

- 2—White, Board of Trade, Commerce, Ga.
- 5—White, Chamber of Commerce, Anderson, Ga.
- 7—White, Board of Trade, Moultrie, Ga.
- 8—Chalmers-Detroit, F. D. Hughes, New York.
- 10—Buick, Chamber of Commerce, Spartansburg, S. C.
- 14—Studebaker, Board of Trade, Winston-Salem, N. C.
- 16—Buick, William Oldknow, Atlanta, Ga.
- 21—Jackson, Jacques Futrelle, Scituate, Mass.
- 26—Maxwell, Maxwell-Briscoe Motor Co.
- 27—Maxwell, Maxwell-Briscoe Motor Co.
- 29—White Star, White Star Auto Co., Atlanta, Ga.
- 43—Chalmers-Detroit, Read Holliday, New York.
- 50—Franklin, George H. Storck, Jacksonville, Fla.

### CLASS 5, COSTING FROM \$851 TO \$1,250

- 18—Maxwell, Commercial Associations, Charlotte, N. C.
- 19—Studebaker, W. J. Stoddard, Atlanta, Ga.
- 31—Reo, R. M. Owen & Co., New York.
- 42—Regal, E. D. Crane & Co., Atlanta, Ga.

### CLASS 6, COSTING \$850 OR UNDER

- 28—Maxwell, Maxwell-Briscoe Motor Co.

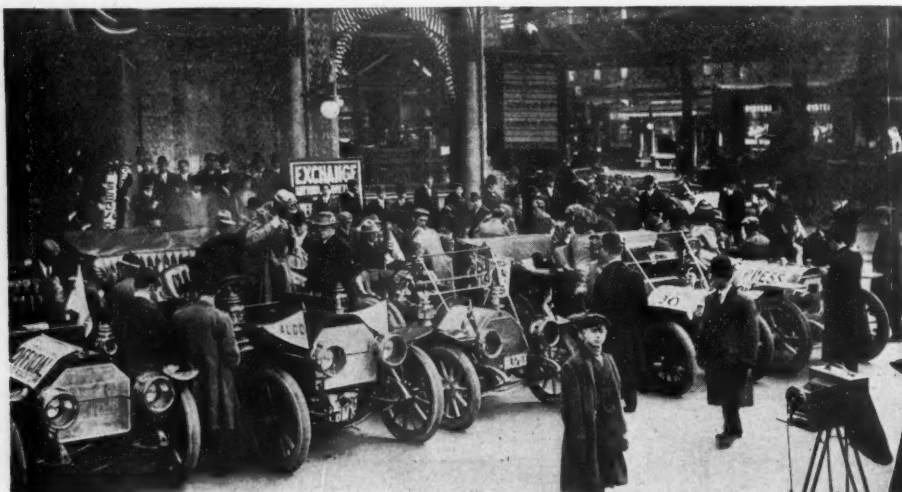
### OFFICIAL CARS, NON-CONTESTING

- Pacemaker—Mitchell, Frank X. Zirbels, Racine, Wis.
- Judges' Car—Chalmers-Detroit, A. L. Westgard, New York.
- Official Car—Alco, American Locomotive Co., New York.
- Official Car—Stearns, Wyckoff, Church & Partridge, New York.
- Checkers' Car—Chalmers-Detroit, T. R. Cobb, Detroit, Mich.
- Press Car—Rainier, Mrs. Joan N. Cuneo, New York.
- Press Car—Locomotive, Miss Mildred Schwalbach, New York.
- Tire Car—Craig, Ajax-Grieb Rubber Co.

Although a number of the original entrants had been withdrawn, or failed to appear for various reasons, it was still an imposing procession.

The police arrangements had been so admirably planned that the parade made its way downtown with scarcely a check, and drew up at the Battery at 10:30 a. m. Two special ferryboats were in readiness, and on these the tourists were soon embarked. The trip across the harbor was quickly made on the speedy boats. At the St. George, S. I., slips the cars were met by the Richmond County Automobile Club, headed by President Charles A. Schultz, which formed an honorary escort during the brief run across Staten Island. Several trips of the ferry at Perth Amboy were necessary to carry the tourists across from Tottenville. Mayor A. Bollschweiler, of Perth Amboy, met the procession at the ferry, and after the ranks had been formed a quick run was made to the Packer House for luncheon.

At 1:30 the tourists were called from their tables and E. L. Ferguson, of Buffalo, the starter, assisted by the checkers, Mortimer Reeves, of New York city, and Inman Gray, of Atlanta, began sending away the cars at intervals of 1 minute. New Jersey's hills were glowing in red and brown autumn foliage, and the crisp air was neither too warm nor too cold for



CARS LINED UP IN NEW YORK READY FOR THE START



comfortable touring. The cars soon broke ranks, each proceeding at the pace most suitable to its driver, with regard only for the schedule that called for checking in at Philadelphia at a given time.

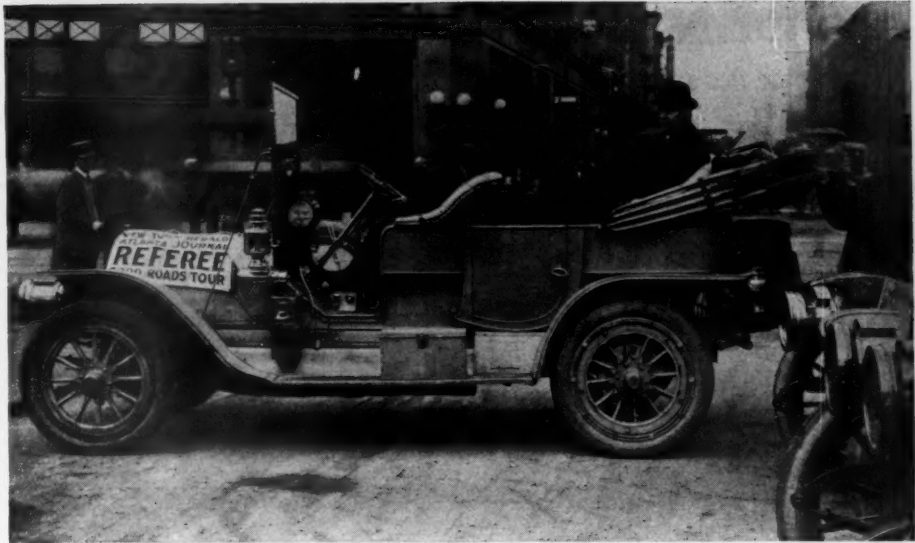
Dayton, Cranbury and Hightstown were traversed in turn, and then Windsor, which proved its loyalty to the cause by displaying a big steam roller busied in resurfacing the macadam. Near Trenton many of the signs which had been posted for the tour had been torn down, partly, it was said, by the town authorities. This unnecessary piece of vandalism caused some confusion among the branching roads outside the city.

Over the big steel bridge spanning the Delaware river the tourists sped into Pennsylvania. Active road building operations were in progress near the villages of Trevoise and Bustleton. Beyond the latter village, and just on the outskirts of Philadelphia, Pacemaker Zirbies met the scout car of the Quaker City Motor Club. A little further on, near the Widener Memorial School, the police escort provided by the Philadelphia authorities, together with a number of cars of local motor enthusiasts, awaited the tourists. It was a quarter past 4 when the vanguard rolled in, and all waited a time to allow the trailers to catch up. Contestants and official cars came dashing in at frequent intervals, and when the line was nearly complete another start was made and the procession swept into the Quaker City.

The checking officials unfurled their standards in front of the quarters of the Quaker City Motor Club in the Hotel Walton, and soon were busy taking the time of the contestants as each in turn came up. Only two cars failed to appear on schedule, the Oldsmobile driven by Henry J. Lamar, Jr., of Macon, Ga., and the Pope-Toledo in charge of Powell Glass, of Lynchburg, Va. The two delinquents appeared in short order, however. The Oldsmobile driver reported three tire blowouts, for which no time allowance is made under the rules, and in addition a 20-minute hold-up by a leisurely freight train on a railroad crossing. He received a penalty of 24 points. The Virginian escaped with 6 points marked up against it.

#### NORWAY STARTS MOTOR CORPS!

London, Oct. 15—A volunteer motor corps is to be established by the Norwegian government, similar to the German and Austrian corps. To become a member one must be from 18 to 55 years old and have a motor car of a minimum of 10 horsepower or a motor cycle of at least 3½ horsepower. The volunteers will nominate their commanding officer and after he has served in that capacity for 5 years he will be made a major in the regular army of Norway. All the members of the corps will have rank as officers in the army, and the chauffeurs of the owners will rank as under-officers. In case of war the motor cars will be equipped with revolvers and guns.



OFFICIAL CAR CARRYING REFEREE SCARRITT IN SOUTHERN RELIABILITY

## Bay Staters Postpone Reliability

BOSTON, Mass., Oct. 23—The calling off of the proposed endurance run of the Bay State A. A., which was to be held here Thursday and Friday last, was about the only thing that could be done under the conditions that prevailed. The committee had planned on running the event in case it secured at least twenty entries. When the entries did not come in readily the members of the committee visited the local dealers and asked about cars going in. They secured promises of at least fourteen machines, but that was not considered sufficient. There were dealers who were ready to enter the run if they had their cars, but they were handicapped by having but one demonstrator. To tie that up for 3 or 4 days would be too much of a handicap and so it was felt that if the run was postponed for a few weeks perhaps there would be enough machines in the city to make it a success. The cars are coming in now rapidly and some time during November there will be enough cars in the city to run off a test success-

fully. The question of rules has been taken into consideration and ones similar to the Munsey tour have been drawn up. These in some ways conflict with the 1909 rules of the A. A. A., for they contain fixed penalties instead of the other sort.

#### ST. LOUIS BUYING CARS

St. Louis, Mo., Oct. 26—Within the last 9 months St. Louis has almost doubled the number of motor cars in operation. This fact has been ascertained by the Automobile Manufacturers' and Dealers' Association from figures given out at the city license inspector's office. In 1908 exactly 1,800 licenses were issued. Already since January 1, 1909, 2,950 licenses have been issued. This means that there are more than 3,000 motor cars operated in St. Louis, as in many instances one license is for two cars owned by the same person.

Last year very few licenses of this sort were issued, but the inspector is authority for the statement that there are many of this kind in existence now.



NEW YORK-ATLANTA RUN PASSING OUT OF GOTHAM

# FIFTEEN RUNNING FOR THE VANDERBILT CUP

NEW YORK, Oct. 27—Fifteen cars striving for the Vanderbilt cup; four running in the Wheatley Hills sweepstakes and six in the Massapequa. That is the offering of the Motor Cups Holding Co. for next Saturday over the combination parkway-country road course which measures 12.64 miles to the lap. The cars running for the Vanderbilt comprise classes 1 and 2—from 301 to 450 cubic inches displacement and from 451 to 600—and they will go 278.08 miles. The Wheatley Hills sweepstakes lets in the 231-300 division, which will go 189.6 miles, while in the Massapequa are the 161-230 cars, which are billed to go 126.4 miles.

To those who have seen the glories of other Vanderbilts this is not a very attractive offering. The fast foreign cars are missing and so are the crack drivers from the other side. America is not leading a forlorn hope this time, for now she is on the offensive rather than the defensive and it would seem as if the chances are bright indeed for the cup going to an American maker. There is no longer any fear of the trophy going out of the country, for even if a foreign car wins it, it probably would adorn a show window on Broadway for the next year.

Another innovation in connection with this year's race which will be appreciated by those who object to staying up all night will be the fact that Saturday's race will be started at 9 o'clock in the morning instead of at daylight. This will, of course, detract from the picturesque procession of motor cars with their flashing headlights and sleepy passengers on the night before the race, but it will contribute considerably to the comfort of the spectators and diminish the chance of accidents.

If last year society looked rather coldly on motor racing, this year, judging by the sale of seats and boxes, they have taken it up again with renewed enthusiasm, and the entire grand stand will be disposed of before Saturday. Among those who have purchased seats and boxes are Mrs. Sidney Dillon Ripley, Alfred G. Vanderbilt, Clifford V. Brokaw, L. M. Bowker, C. A. Fowler, Carl Berger, J. M. Murdock, William Mitchell Lewis, L. M. Gibb, Charles D. Cooke, John C. King, G. M. Weeks, H. H. Fleischman, R. Percy Thompson, E. D. Morgan, Charles Steele, Mortimer Schiff, F. G. Curtiss, W. H. T. Huhn, Dr. Allen T. Haight, E. W. C. Arnold, Sidney J. Smith, J. F. O'Rourke, Joseph M. Gilbert, Charles G. Gates, George Bennett, Windsor T. White, Iuglis M. Uppereue, M. J. Walsh, Benjamin Briscoe, Hugh Chalmers, Carl Page, Eugene Van Schaick, H. S. Firestone, J. M. Macdonald, A. B. See, J. D. Adams, E. R. Willits and H. Z. Gray.

The drawing for positions in the race will be held at the Garden City hotel at 8:30 o'clock tomorrow evening. As in previous years there will be two drawings,

## OFFICIAL LIST OF ENTRIES FOR THE VANDERBILT CUP RACE

### VANDERBILT CUP RACE

Classes 1 and 2. Distance 22 laps—278.08 Miles

Prac. No.	Car	Driver
1	Simplex	L. A. Mitchell
2	Isotta-Fraschini	Joe Seymour
3	Chalmers-Detroit 40	Bert Dingley
4	Chalmers-Detroit 40	L. B. Lorimer
5	Fiat	Lewis Strang
6	Alco	Harry F. Grant
7	National	John D. Aitken
8	National	Charles C. Merz
9	Apperson Jackrabbit	Hugh N. Harding
10	American roadster	Willie Haupt
11	Buick	Louis Chevrolet
12	Fiat	E. A. Hearne
14	Fiat	E. H. Parker
15	Marmon	Harry Stillman
16	Mercedes	S. E. Wishard

### WHEATLEY HILLS SWEEPSTAKES

Class 3. Distance 15 laps—189.60 Miles

31	Moon	Philip Wells
32	Marion	George L. Reiss
33	Marmon	R. W. Harroun
34	Columbia	R. W. Wilcox

### MASSAPEQUA SWEEPSTAKES

Class 4. Distance 10 laps—126.40 Miles

41	Chalmers-Detroit 30	William Knipper
42	Chalmers-Detroit 40	Joe Matson
43	Maxwell	Martin Dooly
44	Maxwell	Arthur See
45	Maxwell	Thomas Costello
46	Hudson 20	George Ainslie

the first to indicate the order of drawing and the second drawing will be made for the order of start in each class. Little time will be lost in starting the cars, as owing to the short circuit this year it will be necessary to send the cars away at 10 or 15-second intervals instead of a minute apart as in former years.

Practice on the course has shown that fast time may be expected. The latter end of last week the Chalmers-Detroits and National were tearing around at a mile a minute and seemed to think nothing of it. Monday there wasn't much doing because of the condition of the course. The rain of Saturday and Sunday had made the county rounds included in the circuit very muddy and so the Chalmers-Detroit and Marmon drivers decided not to go out, though the big Marmon, driven by Harry Stillman, was out after the practice hours were over.

Thirteen cars were out, but none of the drivers tried very hard to make fast time, as there were too many puddles on the county roads for either comfort or safety if a car was driven fast. Mitchell, in the Simplex, made the fastest round, being timed in 14¼ minutes from the grand stand on his first circuit of the 12.64 miles course. He made another round in 32 minutes. The three little Maxwells made their first appearance, but Martin Dooly was the only driver to make a round from the grand stand, which he did in 20 minutes.

Harry F. Grant made his initial appearance with the six-cylinder Also, making his first round in 19 minutes and his second in 15½ minutes. Willie Haupt was another driver who had his first practice, making two rounds with the American in 24 and 17 minutes respectively. Hugh

N. Harding made two rounds with the Apperson in 17¼ and 21 minutes. The Marion entered for the Wheatley Hills trophy was out with C. E. Stutz at the wheel, but did not make a complete round from the grand stand. Both the Nationals were out. Aitken made three rounds in 26 minutes, 17¼ minutes and 22 minutes. Merz made two rounds in 25¼ minutes and 17½ minutes. All three Fiats were out, but did not make complete rounds.

The course was much faster yesterday and twenty-three cars were out. Philip Wells, in the Moon, dashed off the parkway near the Massapequa turn and went through a wire fence, but did no serious injury to either himself or his car. Jack Aitken, in one of the Nationals, ran off the parkway on the turn approaching the grand stand, but got out of the ditch under his own power. Two of the Chalmers-Detroits dashed off the cement near the same point when going at great speed, and each suffered a slight injury that was quickly repaired. Matson's Chalmers broke a valve spring and Billy Knipper's Chalmers broke a steering knuckle. Practically every car out for practice traveled faster than 60 miles an hour. The most exciting brush down the motor parkway was between Parker in the Fiat and Hugh Harding in the Apperson. The speedometer in the Fiat registered as high as 84 miles an hour during the dash.

The practice today was hampered by a fog, yet twenty-one cars were out. Stillman, in a Marmon, made six consecutive laps of the course, the longest run so far during the arypouts. The best time was made by Aitken, in a National, who went four laps, the fastest of which was reeled off in 11:07.



# MIDDLE WEST ROAD ENTHUSIASTS MEET

COLUMBUS, O., Oct. 26—The largest good roads convention ever held in the middle-west was called to order today by James H. MacDonald, president of the American Road-Makers' Association, at which time a joint meeting of the Road Makers' Association, the Ohio Good Roads Federation and the County Commissioners' Association of Ohio was held. The sessions of the congress will extend over 4 days, during which time problems of practical road-building and maintenance will be discussed by experts from every section of the country.

At noon today 750 delegates had registered, representing thirty-three states and territories and including the foremost road-building experts and advocates of the country. The meeting is unique in that it is a convention of practical road builders, including the highway commissioners and engineers of many states, members of the United States department of agriculture and others who have borne the brunt of the fight for road improvement during the past decade.

While the motorists and motor associations are heart and soul in the movement they are not so much in the front as in many other movements. Instead they are permitting the farmers and business men of the various communities to lead and officer the local associations, while they remain in the ranks, serving as privates, but co-operating heartily in the movement. In that way the farmer, who is the backbone of every successful good roads movement, is not estranged by what has been considered the undue activity of the motor car owner.

One of the principal points brought out on the first day's session is the fact that the office of public roads, United States department of agriculture, stands ready to assist any and every community to improve the highways by sending a road expert to the community, free of expense, upon the solicitation of the influential people of the locality. This offer was made by Logan Waller Page, director of the office of the public roads. Mr. Page spoke at length of the best methods to be employed in certain districts to improve the highways and to use the materials which are near at hand. He dwelt especially upon the process of baking the clay and the mixture of sand and clay as is followed in several of the southern states.

Recently the department has entered into a work which gives great promises of usefulness—that of preparing for counties a comprehensive plan of construction, administration and maintenance, after it has started an elaborate scheme of improvement. These plans are only formulated after an exhaustive study and investigation of every phase of the question and a number of counties already have availed themselves of the services.

Deputy State Highway Commissioner of

Michigan Frank F. Rogers read a paper on "Michigan's Road Problem," in which he told of the large amount of money being spent in that state. He gave extensive data as to the manner in which the roads of Michigan are being improved. Nahum J. Bachelder, master of the National Grange, spoke of the co-operation in road building between the farmer and the business man and told of the work in the east. Discussion by the delegates followed each paper.

Owing to the delay of Samuel H. Hill, of Seattle, Wash., his paper on "Blazing the Way On the Pacific Coast," was postponed until tomorrow. Because of the death of a relative, Governor Judson Harmon was unable to deliver the address of welcome on behalf of the state of Ohio and his place was taken by his secretary, George L. Long. Mayor C. A. Bond, of Columbus, and Secretary J. Y. Bassell, of the chamber of commerce, also delivered welcoming addresses. Responses were made by the officers of the three associations.

Wednesday's program consists of executive sessions of the three associations, after which the convention proper will be called to order. The president pro tem of the Ohio senate, N. O. Mather, and the speaker of the house of representatives, Granville W. Mooney, and other members of the general assembly and state officers are on the program for talks. J. C. Wonders, Ohio highway commissioner, is scheduled to discuss a technical subject. The afternoon of the second day is to be given over to newspaper men and practical road-builders.

The local committee on entertainment, of which Lee M. Boda is chairman, has perfected a pleasing plan of entertaining the delegates, of which it is expected more than 3,000 will attend the convention. Mr. Morehouse, president of the Columbus Automobile Club, is chairman of the reception and registration committee.

Vice-presidents have been appointed by Chairman James H. MacDonald, representing all of the states which have sent delegates. The chairman of the credentials committee is T. Hugh Booreman, of Pennsylvania, and the chairman of the resolutions committee is E. L. Powers, of New York.

One of the features of the meeting is the construction of a stretch of experimental roadway on Eleventh avenue to demonstrate the method of macadamizing a highway. Motor cars were donated by the Columbus Automobile Club to transport the delegates to the roadway. Another feature of the meeting is the large display of road-building machinery and materials which occupies a large building on the Ohio state fair grounds. Several sessions of the association will be held on the fair grounds.

James H. MacDonald, Hartford, Conn.,

is president of the American Road Makers' Association; E. L. Powers, New York, secretary, and Joseph W. Hunter, Harrisburg, Pa., treasurer. Of the Ohio Good Roads Federation, W. M. Hager, of Cleveland, is president; Arch H. Huston, Columbus, first vice-president; Jesse Taylor, Jamestown, O., second vice-president; C. S. Ashbrook, Mansfield, third vice-president; F. J. Fry, Tiffin, fourth vice-president; Julius F. Stone, Columbus, treasurer, and M. M. Maxwell, Cleveland, secretary. Henry A. Mason, of Columbus, is president of the County Commissioners' Association of Ohio and O. J. Townsend secretary.

## QUAKERS FILE A PROTEST

Philadelphia, Pa., Oct. 26—At a meeting of the board of governors of the Quaker City Motor Club a resolution introduced by Richard Sellers was adopted unanimously: "We hereby enter protest against the A. A. A. granting sanctions to any individual or individuals to carry on race meet such as took place Saturday, October 16, at Point Breeze track, Philadelphia, for the reason that such race meets are detrimental to the sport of motoring, as they bring discredit to allied clubs and place the national organization in a compromising position before the patronizing public." This was the meet for which a sanction was granted Jack Hickock at which the Curtiss aeroplane exhibition was supplemented by several match races between Robertson, Haupt and Bergdoll. In response to Chairman Howers' request that the club claim dates for next year's events before November 1 this year, the contest committee named the following: January 1-2, midwinter endurance run, subject to change; April 30, May 1-2, road ability run; June 4, spring track meet; August 6, midsummer track meet; October 8, Fairmount park road race. Hower writes that claims for dates filed after November 1 will be of secondary importance and that the manufacturers want to make an early decision as to what events in the competition line they will support next year.

## WANT GOOD ROADS COMMISSION

Oklahoma City, O., Oct. 22—For the purpose of promoting good roads legislation the members of the party who have been touring the country with President B. F. Yoakum, of the Rock Island railroad for the past month, studying good roads, have formed themselves into an organization called the Southwestern Good Roads Association. The Oklahoma members of the association say they will insist that the legislature take immediate steps to provide for a state highway commission, already provided for in the state constitution of Oklahoma and of which the state thus far has not taken advantage but which it is expected to do.

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## Noiselessness in 1910 Cars

**N**EW qualities of 1910 cars are today receiving more attention at the hands of designers and factory forces than the reduction of noise. This is not the first season that noise-reduction has received major attention, but it is questionable if ever before has it come in for so general consideration. The American car for 3 or 4 years has made a name because of its quietness, many of the cars being particularly meritorious in this respect. For next year, however, the reduction of noise has concerned the cheap maker as much as the builder of high-priced machines. Heretofore noiselessness has generally been looked upon as a good criterion of car status. The cheap car was never expected to operate as quietly as the more expensive one and it was generally expected that after it had been used a few weeks or months the noise would be an expected quantity. Even with the lowest-priced cars this condition will not exist to the same extent next year because constructions are being added to many of the lowest-priced machines which will do much towards reducing the noise made by these machines.

**F**ITTING a muffler is not the only method of reducing noise. At one time the majority of the motor-buying population thought it was, and believed that the quietness of a car depended solely on the efficiency of the muffler. The fallacy of this argument has been largely exploded by showing to the public that other parts of the car have a direct bearing on the noise quantity. The construction of the crankcase is a big factor in reducing the noise. Aluminum crank cases could be made much thinner than many used at the present, but if so made the noise of the explosions in the motor would not be so efficiently muffled. Some makers use aluminum crankcases  $\frac{3}{4}$  inch thick when one little more than half of the thickness would suffice if it were not that it would not muffle sufficiently well. A crankcase casting 1 inch thick is nearer the mark when it comes to complete muffling.

**B**UT in addition to the materials in the crankcase there are other noise reducing factors. The opening and closing of the valves has always been a perplexing problem. Where the top of the tappet strikes upon the bottom of the valve stem noise is created but makers have largely eliminated this by inserting fiber washers in cups in the tops of the tappets or valve lifters. This practice was very rare 4 years ago but is common today. Rollers on the bottoms of the tappets are now general and aid in noise-reduction.

**V**ALVE in the head motors have been ruled against in some factories because of the extra noise due to the exposed tapping of the rocker arms on the ends of the valve stems and also to the fact that this noise is created nearer to the top of the bonnet and is so not muffled to the extent it would be when made lower down by the cylinder side. Some of the more enterprising devotees of the valve-in-the-head type have added aluminum cases which entirely enclose the valve rocker arms and valve stems so that not a bit of noise is created by the overhead valve or camshaft systems. The introduction of helical timing gears for the motor, the use of combination fiber-bronze gears in place of steel ones, and a score of other devices have all combined to reduce the motor noise and make the 1910 car characteristic for its noiselessness. Not to be overlooked is the noise reduction caused by better workmanship in the motor and transmission parts, and the better assembling of the chassis parts.

## The South Asserting Itself

**N**OBODY can possibly follow the unprecedented display of motor-ing enthusiasm south of the Mason and Dixon line at present without feeling that a new life has taken possession of the southern states and that they have at last grasped the fact that the motor car is the greatest agent of progress of the present century. Three years ago many of the big cities of the south owned but a motor car or two, whereas today they count their cars by the hundreds with prospects for more than doubling the number in the coming year. The activity of the south at present is manifesting itself chiefly along the good roads line. Every state is jumping into the goods roads band wagon and the entire convict population in some of the states is being used to build roads. This has been made possible because of changes in the laws whereby the leasing of convicts to private corporations is stopped and the entire work done by them being done direct for the state. Naturally the building of good roads offers the easiest source of employment for these unfortunates and fortunately the good road enthusiasts have not been idle and the ball has been set rolling in the best of style.

**S**O far the resurrection of the south as a motoring prospect began with the Savannah enthusiasm a year or so ago, when it built a road and secured the national stock chassis races over this course. Later last year the grand prix race was run over this course. At both of these races Savannah was filled with southerners who for the first time saw the value of good roads not only because of the pleasure coming from their use but also because of the advertisement of such to the state. After Savannah had enjoyed its era of racing attraction, Atlanta jumped into the breach and is now the chief center of attraction. The national motor car show which opens there next week is one example of what unbounded enthusiasm can accomplish. But Atlanta has not stopped here. Through private enterprise a 2-mile motor speedway has been built, and the city is bidding to become the great distributing point of the south. Already manufacturers are opening branch houses in Atlanta, jobbers who never heeded the southern call are opening agencies and Atlanta has practically established herself as the metropolis of the South.

**W**HAT is happening in Atlanta is transpiring to a much smaller extent in other southern cities and states. The garage is invading the 5,000 and 6,000-population cities, the agent is hanging out his sign in places of 10,000 and in the larger cities the tidal wave of motor progress has hit them.

**T**HE south has realized first of all that roads are needed for the motor car, and that roads mean development of the rural sections. Every state has taken up the good roads flag in earnest; every city is aiding in the propaganda and hand in hand will come the general prosperity of those sections, that are directly concerned. It is phenomenal that this good roads move is not limited to any particular state, but that all share alike in the new move. The present New York-Atlanta tour is doing much to move the good roads cause, as well as linking the interests of the south closer with those of the north. The tours of southerners through their own land is also aiding in the promulgation of the new movement. The tour is only the forerunner of what is to follow and is intended to point out the need of a national highway which will go from New York to Savannah and from Savannah to Jacksonville—a grand motoring thoroughfare.



# EUROPE UNITES TO AID THE MOTORISTS

PARIS, Oct. 18—The United States being ununited in the matter of motor laws and regulations, was unable to take active part in the international parliament held in Paris recently for the purpose of unifying regulations governing motor traffic throughout the world. The net outcome of the meeting is that nine nations, namely, France, Germany, Italy, Belgium, Bulgaria, Roumania, Montenegro, Serbia and the principality of Monaco have signed an agreement which will materially simplify international motor touring. In order that a car of any one of these nations may be allowed to enter free and without formality into any of the nine countries, all that is necessary is that it shall obtain an international road certificate from its home authorities. The certificate, which is good for 1 year from date of issue, is issued for both car and driver on the fulfilment of certain requirements. The machine must be up to a certain standard, which is practically that of the Service des Mines in France, the points of which are safety from fire and explosion, effective steering, two independent sets of brakes and simplicity of control. The driver must not be less than 18 years of age and must give proof of his ability to handle a car in a safe manner to the satisfaction of the examining authorities.

With driver and car up to standard, the motorist may go forth into any or all of these nine countries without any other driving license or the necessity for any other registration number than that issued by his own country. The move is an important one, and will be specially appreciated by those visiting France, Germany, Belgium and Italy, which are the most extensively toured countries in Europe.

## England Not In Pact

It will be noted that England, in addition to America, has failed to join the international group. English regulations are very similar to those of America: any car can be put on the road providing taxation is paid, and any man can have a driving license on making application for it and paying the necessary fee. To come into line with the others it would have been necessary to institute an examination of cars, with a special registration other than that for taxation purposes, and further it would have been necessary to establish an examination for drivers with an accompanying registration, as is now done in France, Germany and other countries. The English delegates evidently could not guarantee that their government would do this and were consequently unable to sign. There is a possibility, however, of them coming into line at a later date.

A proposal was brought before the congress that a universal rule of the road should be adopted, all vehicles keeping

## Nine Nations in Pact That Will Make Touring Conditions Easier on the Continent

to the left and passing on the right, as is done in England and certain portions of continental Europe. The disturbance that would be caused by such a change prevented it being adopted, but it was significant that the proposal gained much favor among delegates of countries where the American rule of the road is in vogue, and that M. Millerand, minister of public works in France, expressed the opinion that later the whole world would have to come to the English method.

### Must Have Special Plate

Among the other matters agreed to by the international conference was that no motor car should be allowed to travel in foreign countries unless in addition it carried a special plate with letters indicative of the country of its origin. Thus an American car would bear a plate with "U. S." by the side of the registration number; an English car would be equipped with a "G. B." plate, etc.

A loud-sounding horn was agreed upon as the proper signal to be used by a motor car, with mechanical hooters allowed in the open country. At nightfall every car must carry two lights in front and one at the rear. Dazzling headlights must not be used in towns. A few modifications were made for the benefit of motor cyclists, the

rear light being considered unnecessary, the size of registration numbers could be reduced, and a reverse gear was not required of the two-wheelers.

All the governments signing the agreement resolved that in their countries a uniform system of road signs would be employed. These will be the four signs recently adopted by the international road congress in Paris, and originated by the Automobile Club of France. The warning is given by means of a figure, without any wording whatever. In addition to these four it was allowed to add a fifth not included in this series, to indicate a custom office or frontier station.

William S. Hogan attended the congress on behalf of the American government, and although not authorized to sign the agreement, will report in detail to the secretary of state. America is as much interested in these matters as the countries of Europe, for, although so far away, large numbers of her motorists annually visit the old world and naturally benefit by the simplification and unification of the regulations. It is certain that this first conference will not be the last. The high standing of the delegates sent by the respective governments is an indication of the importance attached to the proceedings.

### Trends in French Cars

Paris, Oct. 15—There will not be a Paris salon this year, but one can safely predict the future of it by the new models the factories have already brought out. The 12-16-horsepower cars would have the most prominent place and the best market. Second would come the still smaller car and third the bigger models. The prevailing type would be the four-cylinder with a majority of the cylinders cast in pairs for the 14-16-horsepower and en bloc for the smaller-powered cars. The majority of the motors will be the L shape with all valves on one side, with the honors equally divided between pump and thermo-syphon circulation for cooling.

The ignition for 99 per cent will be the high-tension magneto. The crankshafts will be three-bearing as a rule, in some of the very small ones at two points with ball bearings. The lubrication will be pressure feed, and the long stroke will be generally adopted. For the big models one will see the six-cylinder gaining ground. The eight-cylinder types will be few. Drive will be almost exclusively shaft. There will be not much change in the chassis construction excepting that springs will be longer and wider. The steering columns will be raked at a greater angle so there will be very little difference on this point between a runabout and town car chassis. Very short hoods will be the prevailing type. The body construction will tend towards the landaulet, town car, and the inside steering coupe is gaining in favor.

## Coming Motor Events

### OCTOBER

30—Vanderbilt cup race.  
30-31—Track meet at Los Angeles, Cal.

### NOVEMBER

1—Second meet on Indianapolis Motor Speedway.  
3-13—Outdoor show at Salt Lake City, Utah.  
4—Reliability run at Tampa, Fla.  
6-13—National show at Atlanta, Ga.  
9—Opening meet at Atlanta speedway.  
14-17—Four-day track meet at San Antonio, Tex.  
20—Track meet at New Orleans.  
22—Start of flag-to-flag reliability, Denver to City of Mexico.  
25—Mile-High hill-climb, Redlands, Cal.

### DECEMBER

25-Jan. 1—Show at Columbus, O.  
28-29—Philadelphia mid-winter reliability run.  
31—Opening of Grand Central palace show, New York.

### JANUARY

7—Closing of Grand Central palace show, New York.  
8-15—Madison Square garden show, New York.  
17-24—Philadelphia show.  
25-31—Detroit show.

### FEBRUARY

4-6—Mardi Gras Track meet, New Orleans.  
5-12—N. A. A. M. show, Chicago Coliseum.  
14-21—Show at St. Louis, Mo.  
14-18—Annual show at Buffalo.  
19-26—Show at Newark, N. J.  
28 to March 5—Show at Kansas City.

### MARCH

5-12—Boston show.  
21-28—Denver Motor Club show.



POPE-HARTFORD, STAR PERFORMER OF DAY

**S**AN FRANCISCO, CAL., Oct. 25—Northern California has had its first great motor car road race. The event was held Saturday in connection with the Portola celebration of the discovery of San Francisco bay 140 years ago and of the rehabilitation of San Francisco from the effects of the great disaster of 1906. A crowd estimated at 200,000 people journeyed to the course in Alameda county, just across the bay from San Francisco, to witness the contests. It was a great fete day and the cities of Alameda county turned out enormous numbers of people who congregated in an almost unbroken line around the 21 miles of the course.

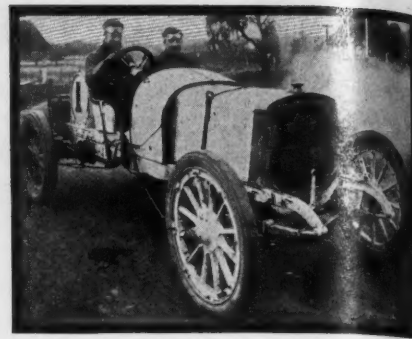
When it all was over it was acclaimed that Pope-Hartford No. 4, driven by Jack Fleming had established a road record when it won the free-for-all and the race for small cars. His time was given as averaging 64.68 miles per hour for the entire distance of 258 miles. The average in the last Vanderbilt was 64.42 miles an hour, it was stated, so California thought it had something in the way of real live records. An investigation today, however, in the county surveyor's office showed the course measured only 21.18 miles, so that twelve laps figured 254.16 miles instead of 258. This brought Fleming's average down to 63.72 miles per hour, which is less than the Vanderbilt and considerably less than the time made in the recent Riverhead contest in Long Island or in the Santa Monica race in California last July by Hanshue in an Apperson.

## PORTOLA RACE RESULTS

Class 1, 148.26 miles		
Car.	Time.	M. P. H.
1—Pope-Hartford .....	135:33	65.7
2—Autocar .....	169:20	52.53
Class 2, 211.08 miles		
1—Apperson .....	202:56	62.4
2—Lozier .....	223:59	56.54
Class 3, 254.16 miles		
1—Pope-Hartford .....	239:18	63.72
2—Apperson .....	247:54	61.51
3—Lozier .....	269:57	56.49

Summed up, the results of the three races were: Fleming's Pope-Hartford won the small-car race in 2 hours 15 minutes 23 seconds, with the Autocar second in 2 hours 49 minutes 20 seconds. Class 2 went to the Apperson in 3 hours 22 minutes 56 seconds, with the Lozier second in 3 hours 43 minutes 59 seconds. The Pope's time—3 hours 21 minutes 14 seconds—was best of the three, but it was not entered in this class. The free-for-all was captured by Fleming's Pope in 3 hours 59 minutes 18 seconds. Second was the Apperson in 4 hours 7 minutes 54 seconds and the Lozier was third in 4 hours 26 minutes 57 seconds.

The race was conducted under the management of L. P. Lowe, of the Automobile Club of California, who also is western representative of the A. A. A. It was Alameda's contribution to the Portola week festivities and that section handed over to the committee thousands of dollars to make the meet a success. The sum of \$5,500 was given to the drivers in cash prizes, while the \$2,000 trophy was given



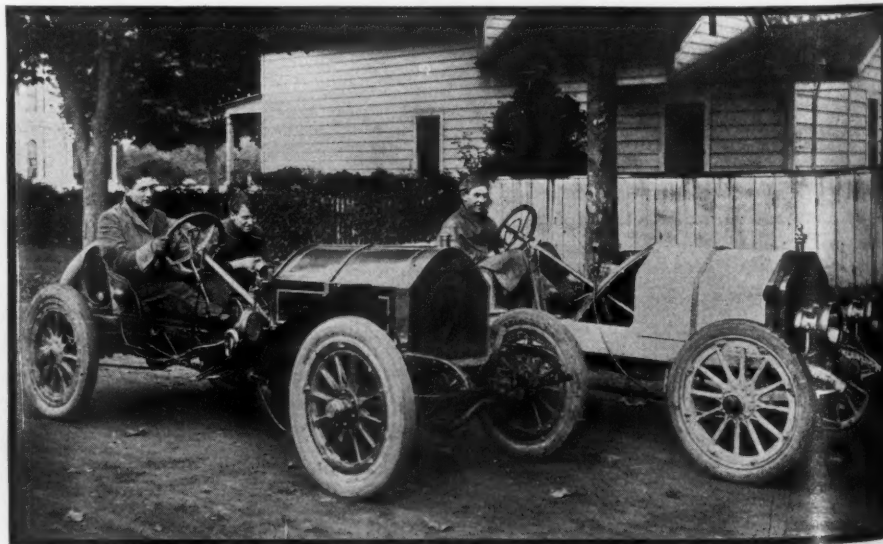
MICHENER IN LOZIER

## Pope-Hartford Stars

**Fleming Drives Cleverly and Wins Class 1 and Free-for-All in Alameda County Races**

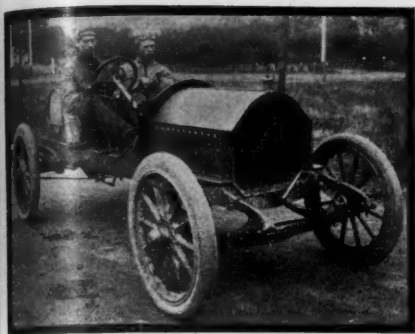
by merchants of the city of Oakland to the winner of the big-car race. The course was almost an ideal one, although its condition might have been improved a little. It started on a foothill boulevard and as the cars shot away from the starting line they had a run of more than a mile before they had a serious turn to negotiate. Then there came a right-angle swing with a few hundred yards straightaway before it and again a right-angle turn and with that safely passed there was a long stretch of 10 miles down the county road to San Leandro and Haywards that was practically an unbroken straightaway. Here and there was a curve, but hardly anything that demanded more than ordinary skill on the part of the drivers. Most of the road was in good condition and partly were macadamized, permitting of the highest speed.

Fleming, the winning driver, got as high as 85 miles an hour on this stretch. At Haywards came a third right-angle turn and after a run of a few hundred yards up a macadamized street a fourth right-angle



FREE IN KNOX AND MURRAY IN BUICK





MORRIS IN AUTOCAR

## In the Portola Races

### Apperson Captures Class 2, with Lozier Second—Autocar Puts Up Fine Performance

brought the race onto a magnificent foot-hill boulevard, a graveled highway on which the speed was limited only by the necessity of watching for turns, which in most cases were gradual. There was more than 9 miles of this boulevard.

Fifteen cars took part in the contest, which was divided into three classes. The first classification was for stock chassis cars with cylinder displacement up to 450 inches; the second class was for stock chassis cars above 450 inches, and the third was for cars of all types without restrictions. The distance of the first contest was 148.26 miles, or seven laps of the course. In this race nine cars were entered and but two of them finished before the event was called off. The first car away was a Maxwell Thirty; then followed a Sunset, a California car; the Autocar, Pope-Hartford, Fleming driver; Pope-Hartford, George Potter driver; Comet six, Al Hall driving; Chalmers-Detroit, Howard Warner driving; Buick Forty, Frank Murray driving; Buick Forty, Christensen driving, and Knox, Frank Free driv-

ing. In the second classification the first car off was the Lozier, driven by Harry Michener; then came the Apperson Jack-rabbit driven by Harris Hanshue, who was perhaps the best known and most experienced driver in the race. Two Stearns cars driven by Charles Soules and D. A. Bonney followed. The last car was a Stevens-Duryea big six. These bigger cars had to cover ten laps of the course, or a total of 211.08 miles. The Autocar and Chalmers-Detroit were entered for the first race only, while the Comet was eligible for only the free-for-all. The remainder were entered in their own classes and in the free-for-all, too, becoming eligible for the latter when they had completed the number of laps required in their particular classification. Thus the Pope-Hartford, after completing seven laps and winning the small-car race in 135 minutes 23 seconds continued on for five more laps and won the free-for-all in 239 minutes 18 seconds. The Autocar's time for seven laps was 169 minutes 20 seconds, giving it second place. None of the other small

cars completed the seventh lap of the race.

The Apperson won the big-car race of 211.05 miles in 202 minutes 56 seconds. The Pope's time for the same distance was 201 minutes 14 seconds. The Apperson's time in the free-for-all was 247 minutes 54 seconds as compared with the Pope's 239 minutes 18 seconds.

It was 21 minutes 44 seconds after the Maxwell had started that the cry of "Car coming!" was passed along from the opposite direction, and in a few seconds Driver King shot by the grand stand, completing the first lap. His average was a fraction over a mile a minute. Hardly 2 minutes later in second place came Fleming's Pope-Hartford, which had started fourth. Then came the Autocar holding its third position, and fourth came Pope-Hartford No. 5. The Chalmers-Detroit followed in fifth place. Christensen's Buick was next and then came Hanshue's Apperson, which was picked by many as the winner. Bonney's Stearns was followed by the second Buick, and then came the second Stearns. In twelfth place was the Knox and in thirteenth the Comet. Bringing up the end were the Stevens-Duryea and Sunset.

Less than 20 minutes after Fleming had passed the stand on his first lap he was back again with his car running beautifully. It was freely wagered that barring accidents he would win. The Pope-Hartford had barely passed out of sight when four more cars were seen to be strung out in line, three of them being on the second lap. Fourth was the Comet just finishing



HANSHUE IN APPERSON, WINNER OF CLASS 2 RACE



COMET SIX-CYLINDER IN THE FREE-FOR-ALL

#### PORTOLA RACE RESULTS

##### Lap Time of Winners

Pope-Hartford—20:07, 20:09, 19:40, 18:52, 19:25, 19:00, 19:10, 27:23, 19:23, 19:05, 19:01, 19:03. Total time, 238:18.

Apperson—22:00, 19:25, 19:59, 20:32, 23:00, 26:50, 19:45, 19:23, 22:39, 19:23, 24:55: 20:03. Total time, 247.54.

its first lap. Then came one of the many exciting moments of the day when five of the cars came over the hill in a bunch and charged with a rattle like a battery of galling guns toward the grand stand. The Stevens-Duryea had been delayed by an accident and it was just 1 hour 1 minute after he had started in the race that Onthank brought his car past the grand stand on the second lap. The third lap passed without special incident except that Fleming still held the lead which he retained throughout the day. It was then noticed that the Maxwell had not appeared after the first lap and presently word came over the phone that a broken fly-wheel had put it out of the race. The Sunset also met with trouble and the Comet six was delayed by dirt in the carbureter. When Fleming dashed by on his fourth lap he was far ahead, his competitor at that time being Soules in a Stearns. This lap Pope-Hartford No. 5, which had been holding seventh position, broke a cylinder and went out of the race. The Chalmers-Detroit had not appeared and it was learned later that it had broken a wheel in the second lap. The Stevens-Duryea also failed to complete its fifth lap. In the third lap the Lozier had fought its way up to second place, but in the fourth and fifth laps it had tire trouble.

The fifth lap saw the withdrawal of Christensen's Buick, this car having a broken oil pipe and as a result it burned out a crankshaft bearing. The seventh lap saw the completion of the small-car race. The Pope-Hartford's winning time, as previously stated, was 135:23, while the Autocar's time was 169:20. Murray's Buick dropped out in the seventh because of a loose radiator. The chances looked very bright now for the Pope-Hartford winning the free-for-all, but in the next lap the car broke an oil pipe, which was soon fixed, however.

The Knox was rather unfortunate from the start. It started in tenth place and it was a hard fight for Driver Free to make any advancement in position. The climax of his misfortunes came in the seventh lap when a steering knuckle broke and the car crashed into a peach orchard, striking a spectator and probably fatally injuring him. The driver and mechanic escaped without fatal injury, but the car was out of the race.

The eighth lap developed a keen fight between the Pope-Hartford and Apperson for honors in the free-for-all. The Pope had been delayed several minutes by the breaking of the oil pipe and tire changing and the completion of the eighth lap saw the Apperson leading by 2 minutes. The beautiful, consistent work of the Pope, however, regained the lost time in the ninth and carried Fleming to the last lap with a steady gain. The Lozier's total time was 269 minutes 57 seconds. Bonney's Stearns finished twelve laps, but its time was not officially taken. Soule's Stearns was running in the tenth lap.



OPENING OF BERLIN TURNPIKE—PASSING THROUGH BERLIN

## Atlanta All Set For Its Big [Show

ATLANTA, Ga., Oct. 25—Details have practically been completed for the national show which will open in the Auditorium-Armory on November 6, continuing to the 13th. The revised list of exhibitors shows that sixty-seven of the leading motor car makers have contracted for space—a remarkable showing for the first motor exposition of the south. Atlanta can rightfully be proud of the response makers have made to the call for the south for a show. With the scores of accessory exhibitors, this is by far the largest list which ever exhibited at a first show. Everything will be in readiness for the exhibitors and the public when the doors are thrown open on Saturday, November 6. Decorators already are at work in the Auditorium-Armory and are preparing a decorative scheme which will provide a proper setting for the 1910 models. Carpenters are busy tearing down partitions to make additional room for exhibitors. Practically every available square foot of floor space has been disposed of, and Atlanta is assured of one of the most successful shows ever held in this country.

Samuel A. Miles and Alfred Reeves, of the National Association of Automobile Manufacturers and the American Motor Car Manufacturers' Association, respectively, who are handling the show details, will establish show headquarters here this week and the work of completing the details will be rushed. There is an unprecedented demand for hotel accommodations and to meet this demand, requests for rooms will be referred to the committee on information and public comfort.

Secretary George M. Chapin, of Atlanta, has issued application blanks for hotel accommodations and all such matters are referred to him for attention. A circular issued by the public comfort committee says:

"The committee on information and public comfort undertakes to find comfortable rooms and board for prospective vis-

itors to Atlanta during show week. It will, if possible, secure quarters in some of the hotels. If this is impossible, it will assign rooms in some of the best boarding-houses or private homes, notifying the visitor immediately of the place selected, rates and all other information. This will give the visitor opportunity to write to the hotel, boarding house or householder and make what further arrangements may seem necessary. The committee urges that all arrangements be made at once, as there will be many thousand visitors in Atlanta during the week and those who apply first will get the best accommodations. An early completion of these arrangements will save confusion upon arrival and relieve the visitor of much worry."

### BERLIN TURNPIKE OPENED

Hartford, Conn., Oct. 25—The 7-mile Berlin turnpike was formerly opened by State Highway Commissioner James H. MacDonald yesterday afternoon. He was assisted by the Automobile Club of Hartford, which arranged a sociability run in connection with the event. The participants in the sociability run lined up at Hartford and, with the state highway commissioner in the lead, headed for the Berlin terminus of the road, where a rail fence separated that portion of the road which was the last to be completed. The state highway commissioner, by virtue of his office, and his assistants tore down the fence and the Berlin turnpike was then formally declared open for public travel. Then the commissioner started back for Hartford, the time of his departure being filled out on a card. After a wait of about 15 minutes the first car in the sociability run proper was sent away. The commissioner's time for the 7¾-mile stretch was 22 minutes and 8 seconds. S. A. Doty came the nearest to the commissioner's time, doing the stretch in 22 minutes, 10 seconds. R. D. Britton was second in 22





OPENING OF BERLIN TURNPIKE—COMMISSIONER MACDONALD SETTING PACE

## Boston Makes March Show Plans

BOSTON, Mass., Oct. 23.—The circular containing the diagrams, rules and regulations and space applications for the next Boston show were mailed during the week. It stated many things the dealers wished to know, chief of which is the fact that the exhibition will open on Saturday evening, March 5, and continue through the following week. Wednesday night has been selected as the society night when the admission price will be doubled. Manager Campbell stated that there would be available for the next show about 105,000 square feet of space. The main pleasure car department will be on the street floor as usual, but instead of placing the overflow wherever opportunity offers Manager Campbell has decided to establish a third section for pleasure cars. This will be in the basement of exhibition hall. The motor cycles will have Talbot hall all to themselves. There will be no cars in the balconies this year, the space there being given to the accessories people. The large basement under Grand hall will be given over to motor trucks. The show will be divided into seven departments. Department A in the main floor of Grand hall, and there are to be fifty-two spaces, some of them costing as high as \$750 each. These are the stage spaces. The lowest price for a space in this section is \$250. The sixteen spaces that occupy the center of this hall are listed at \$600 each. Department B comprises what is called Exhibition hall. It forms a triangle. The spaces range from \$150 to \$450. The basement under Grand hall is to be department C. The spaces there will average about 325 square feet each and they will be sold at from 60 to 65 cents per square foot, making the spaces net from \$175 to \$200 each. Department D is to be the basement of the Exhibition hall, where the overflow of pleasure cars will be shown. These spaces will average about the same as the ones in the other basement. Department E comprises

the balcony around the Grand hall and these spaces average 210 square feet, selling at 75 cents per square foot, netting \$157.10. This is where some of the accessories will be shown. Department F is the upper section of Exhibition hall and includes Talbot hall, where the motor-cycles are to be shown. Department G occupies the entry between Talbot hall and the upper floor of the Exhibition hall. It will be occupied by the accessory people and undoubtedly will be filled to the limit.

### CHANGES IN WASHINGTON

Washington, D. C., Oct. 23.—In anticipation of the largest volume of business in the history of the industry in this city, the motor car dealers of the national capital are enlarging and improving their salesrooms, making additions to their lines, and increasing their facilities for handling the increased trade that is looked for during the 1910 season. The L. P. Dorsett Co. is doubling the capacity of its salesrooms and garage at Seventeenth and U streets, giving it storage space for 100 additional cars. This company, which has handled the Stoddard-Dayton and Babcock electric for a number of years, has just taken on the Mitchell and Empire. Charles E. Miller & Brother, Ford agents, are remodeling their salesroom on Fourteenth street, adding two additional stories and they also are installing new equipment for a complete line of sundries. The Overland Automobile Co. secured a building permit this week for the enlargement of its garage at 1215 V street. The present building will be doubled in size and will face on V street, where salesrooms will be located. The Dupont Garage Co., which handles the Lozier, Columbia and Detroit electric, has opened a salesroom at the corner of Thirteenth and G streets, in the downtown business section. The Motor Sales Co., has relinquished the Herreshoff agency and has

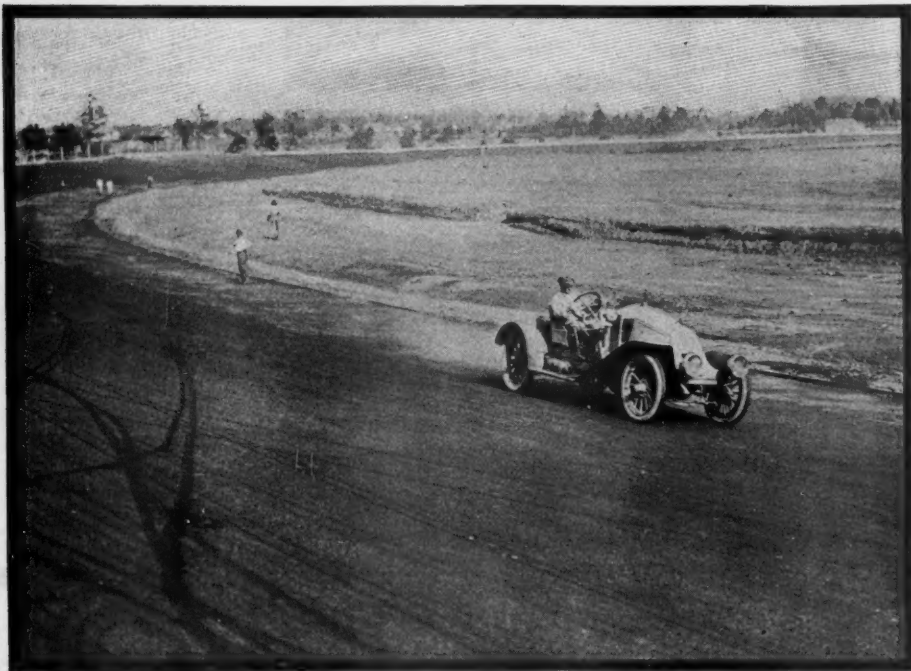
added the Moon and the Rauch & Lang electric. The Newbold-Speedwell Co. is the name of a new concern that has secured quarters with the Warner Motor Co., at 1206 New Hampshire avenue. It will handle the Speedwell. G. H. Covert has been made general manager of the Warner Motor Co., succeeding A. Parker Warner, who has resigned to engage in another line of business. The Roman Automobile Co., of Philadelphia, has opened a branch store on H street, and will feature second-hand cars. M. Isenberg and M. Freedman are the local managers. The Wilson Co. has taken possession of its new salesroom and garage at 1333 Fourteenth street, and has added the Hupmobile to its line, which also embraces the American Simplex, Woods electric and Chase delivery wagon, all well known here.

### BOOM ON IN OMAHA

Omaha, Neb., Oct. 25.—The rapid development and growth of the motor car business in Omaha and Nebraska is demonstrated by the number of new firms that are entering business in Omaha. Following right on the heels of the announcement that the Buick company and Nebraska Maxwell-Briscoe company had opened Omaha offices, comes the statement that three more concerns will enter the business here and another firm has changed hands, bringing to Omaha the agency of another car. One of the new ones is the Mid-West Auto Co., handling the Cole. R. A. DeWitt is general manager and F. J. Knott is secretary. Another new arrival is the Omaha Motor Car Co., handling the Cartercar, with offices at 1117 Farnam street. McIntyre & Wallace in the future will be known as the Wallace Automobile Co., occupying the same location. The new company has secured the agency of the Stearns. Charles Merz, of Indianapolis, a race driver of note, and H. E. Wilcox, of Casey, Ill., have incorporated under the name of the Standard Automobile Co. and will handle the National and the Standard six. The company will erect a \$40,000 garage, which will be completed by January 1. It will be 68 by 124 feet, two stories in height and of reinforced concrete. A feature will be the installation of completely equipped rest rooms. There also will be a reading room for men and women and a billiard table will be installed in the men's room. Separate doors will be constructed for the entrance and exit of cars.

### THOMAS DENIES A RUMOR

Buffalo, N. Y., Oct. 26.—A rumor reached this city that the Thomas plant had been bought by the General Motors Co., but this is denied by the local concern, which has issued the following statement: "The E. R. Thomas Motor Co. desires to state that it has not been purchased by the General Motors Co."



ASA CANDLER IN RENAULT ESTABLISHING AN AMATEUR MARK



ONE OF THE GARAGES AT ATLANTA TRACK



GARAGE ROW, LOCATED BACK OF THE JUDGE'S STAND

## Great Speed Is Shown

ATLANTA, GA., Oct. 23—The new speedway upon which the Atlanta Automobile Association, as represented by Asa Candler, Jr., and E. M. Durant, has spent \$300,000, is completed and this afternoon it was given its official test in order that a line on its speed might be obtained. With such star pilots as Robertson, Oldfield and Basle to attain the best flight and with several local celebrities assisting in the demonstration, the southerners are convinced that they have a speedway that compares most favorably with Indianapolis. Oldfield showed 77.5 miles per hour for 5 miles in his Benz and Robertson's best in the Simplex was 75. Flying starts were used, so it is hardly fair to compare the time with Indianapolis', but even allowing for the difference in starting it would seem as if Atlanta had the shade.

The new track is 2 miles in circumference. The homestretch is 100 feet wide, the back stretch and curves 60 feet; the curves are banked 10 feet and have a radius of 880 feet. The surface is of clay, sand and gravel, with an asphalt binder whereas Indianapolis formerly had macadam mixed with tar and which since has been changed to brick, while cement is used on the Brooklands track in England. The Atlanta grounds will accommodate 40,000 people and several improvements over Indianapolis were noted today. It will at once be noticed that the builders have sought for safety for the spectators and officials. The judges' and press stands are erected on a raised bank at the tape, so that if a car does happen to run off the track it will not run amuck among the officials. Then, too, the garages all are located immediately back of the judges' stand, a broad avenue leading between two rows of the little buildings. There isn't the sign of a fence on the inside of the track and the bleachers are erected alongside the big grand stand.

The track stood the speeding well and when the few waves are worked out, as they will be before the formal start of the racing, the oval should be wonderfully fast. The afternoon went off without a hitch of any character and there was nothing that remotely resembled an accident.

The meet was an altogether informal affair. It had been planned to give a demonstration in order that the world might know that it was completed. With this demonstration it was decided to include an entertainment for the newspaper men of Georgia. Just by way of turning an honest penny the track was thrown open to the public and nearly 3,000 enthusiasts were out to see the trials.

Robertson and his Simplex and Basle with a couple of Renaults, were brought down by the Atlanta association. About the time of the meet J. A. Sloane happened along with Oldfield and Ben Kirb-



## On the Atlanta Track

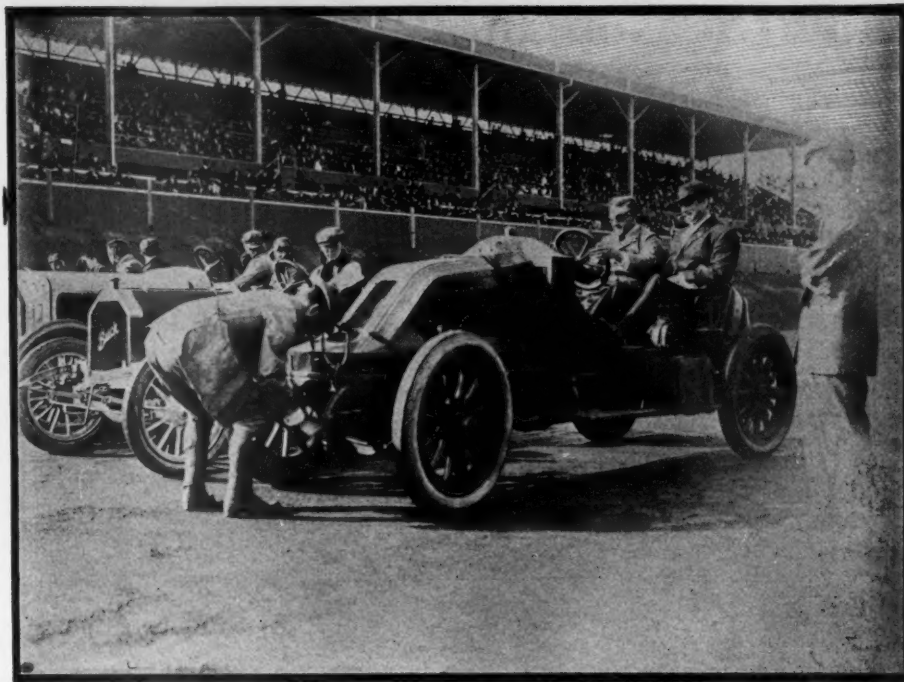
er. The former had his 120-horsepower Benz, which always will be known to the south as the Hemery Benz, and Kirchner had the 100-horsepower Darracq. In addition Asa G. Candler's Pope-Toledo was on hand for the races, with Florence Michael, a local boy who drives under the impressive title of Louis Cliquot, at the helm. The festivities opened up with a barbecue, prepared by Former Mayor W. R. Joyner, at which a couple of hundred railroad men and newspaper men took part. Then the cars were put on the track and sent around, with Fred Wagner holding the watch. Here are the results of the time trials:

Barney Oldfield, Benz—2 miles in 1:31 3-5; 3 miles in 2:21 3-5; 4 miles in 2:03; 5 miles in 3:52 3-5; 6 miles in 4:34 2-5.  
 Cliquot, Pope-Toledo—2 miles in 1:36; 3 miles in 2:45 2-5; 4 miles in 3:38 2-5; 5 miles in 4:34 3-5; 6 miles in 5:21 4-5; 10 miles in 8:42 3-5.  
 Robertson, Simplex—2 miles in 1:34 3-5; 5 miles in 3:59 4-5, and 6 miles in 4:34 4-5.  
 Basle, Renault—5 miles, 4:34 4-5.  
 Kirchner drove a Darracq 1 mile in :53.  
 Basle, Renault—2 miles, 1:50.  
 Ed Durant, amateur, of Atlanta, Renault—5 miles in 5:08.

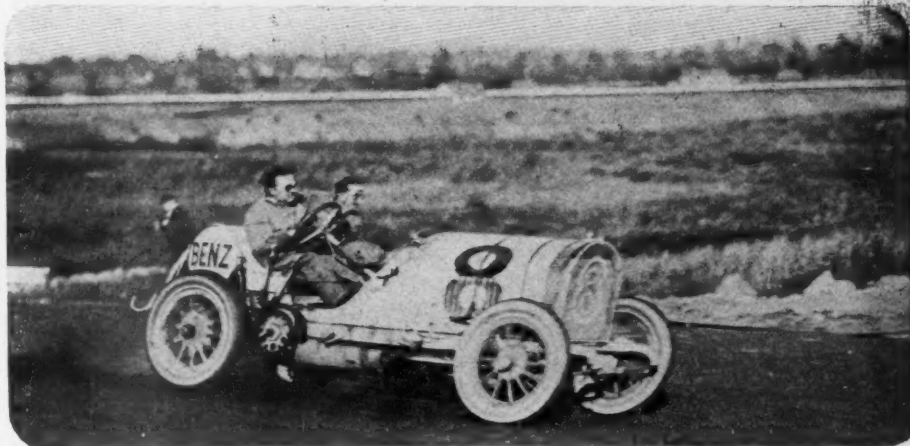
After the time trials were over a little friendly match race was run in which Robertson, Cliquot and Basle took part. Robertson favored the Pope-Toledo with the lead for a lap and then passed the local driver at the first turn on the second lap and thereafter won as he pleased. The Pope-Toledo was second and Basle in the stock Renault was third.

Work has begun in earnest on the show building. The annual Atlanta horse show kept the decorators out of the building, except parts of the basement, until Saturday, but then they got under way in earnest.

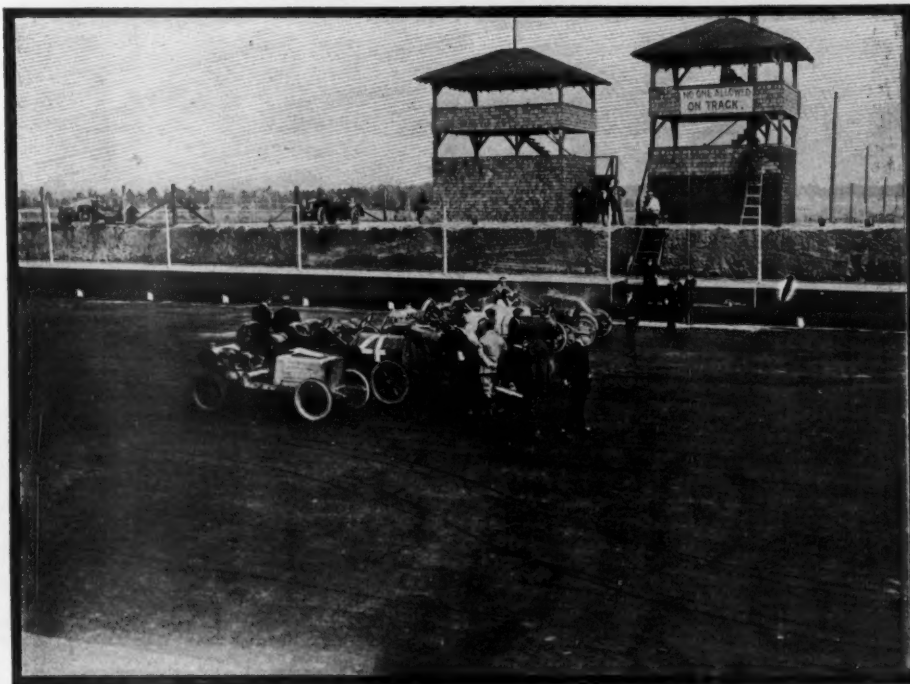
The Georgia state runs will be notable for the number of entries. In no single branch of the tour will records be made, but the combined number of cars which will journey to Atlanta from five points undoubtedly will be larger than ever before recorded in any kind of a tour whatsoever. The rules have been made extremely strict in these runs and a tremendous task awaits the various technical committees before winners are secured. In this run there are prizes for the best scores and prizes for the road-builders as well. One interesting development of the tour has been the organization of a motor club in Macon, Ga., one of the cities through which one of the Georgia state runs will pass. One notable feature of the various Georgia runs is that the mayors of Savannah, Albany and Fitzgerald, three cities which will be starting points of various divisions, will take part. Notables from Savannah in addition to Mayor Tiedeman will be Frank Battey, president of the Savannah Automobile Club; T. A. Bryson, a prominent Savannah dealer who drove the scout car from Savannah to Atlanta and return, and R. V. Connerat, manager of the Buick southern branch.



E. M. DURAND IN RENAULT TRIES THE TRACK



OLDFIELD IN THE BENZ AFTER ROUNDING INTO HOME STRETCH



TRACK AT TAPE, SHOWING BANK ON POLE

## Show Season of 1910 Is Now On

SAN FRANCISCO, Cal., Oct. 21—San Francisco is holding its third annual show, and while, owing to lack of accommodations, it is in some respects smaller than those held during the past 2 years, it is more beautiful in its general effect than any. The show is being held in the great basement of the Emporium department store on Market street, in the heart of the business section of the city. Lack

rehabilitation of San Francisco after the great fire of 1906.

The great basement has been fixed up with floral decorations until it is a veritable fairyland. But the appeal to the beautiful has not stopped with the efforts of the show management. Almost every exhibitor has some feature in connection with his display that is calculated to catch the fancy of the visitor, and the ensemble



RAMBLER DISPLAY IN SAN FRANCISCO SHOW  
THE WHITES AND THE PRIZES THEY HAVE WON

of proper auditorium buildings—all of which were wiped out by the great disaster of 1906—forced this upon the committee, as it was deemed important that the show should be downtown. San Francisco is full of vast crowds drawn here from all over the west in connection with the Portola celebration, which serves to commemorate the discovery of San Francisco bay by Don Gaspar de Portola these many years ago, and also as a mark of the

is altogether charming. The success of the show is indicated by the daily attendance of thousands. Represented in the show are more than thirty different makes of cars, and the number of models displayed runs into the scores. In spite of the fact

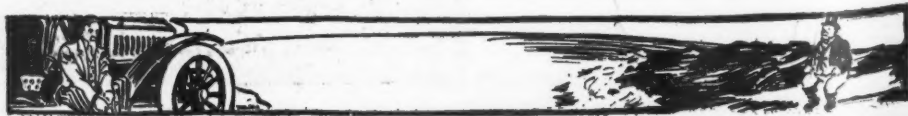
that the space is comparatively limited some of the dealers have placed on the floor more than half a dozen different cars, ranging in variety from electric pleasure cars to gasoline motor trucks. The cars range from two to six cylinders and from 12 to 75-horsepower. There is motor ambulance and motor hearse. There are racers, roadsters, runabouts, touring cars, toy tonneau cars, town cars, landaulets, limousines and stripped chasses.

One of the most interesting features of the show is its growing importance in the eyes of the manufacturers and the agents. An example of this is the case of the Midland. N. B. Taylor, the factory representative of the Midland Motor Co., of Moline, Ill., has brought his car to the show for the express purpose of showing to the Californians with the end in view of placing agencies for the car in this city and throughout the state generally. Another example of the interest of the manufacturer is the visit of Charles Fisher, general sales manager of the Randolph Truck Co., of Chicago. The northern California agency for this truck has been taken by the Pioneer Automobile Co., one of the biggest of the local firms, and Fisher has come out to get in touch with the local merchants.

But it is not alone from the east that the agents have come to San Francisco to attend the show. From all over California and the Pacific coast they are in attendance. A large number of the 1910 models have been rushed out for the show and are now on exhibition for the first time. Scores of the general representatives are getting their first view of the new models now, and they are placing their orders in accordance with their views of the new car's value in their respective territories. From Portland have come a number of the agents, and from Seattle too. Among the visitors from the latter city is George W. Miller, who last season had the distinction of selling more Winton cars in his Seattle store than any other agent of Winton in the entire United States.

The agents who are exhibiting at the show express themselves generally as very well satisfied with the results that they have secured. Most of them have made a number of sales, and they feel that while in some instances these sales might have been made anyway, the show brought the prospects to the point where they paid down the money.

The most extensive exhibit in the show is made by the Pioneer Automobile Co., which is showing nine cars. In the Thomas line the company is showing a 6-70 toy-tonneau, a 6-50 touring car and a 4-60 touring car. In the Chalmers-Detroit line there is a 40 touring car, a 30 touring car, a 30 toy tonneau and a 30 roadster. Then





there is the little Hudson car, and finally the Randolph truck.

The White company has seven cars in the exhibition, including complete lines in gasoline and steam. In the steam models, which have made the White famous there is the 40-horsepower and the 20-horsepower touring cars. There is a roadster and a toy tonneau in the 40 type and a stripped chassis of the 20. There are two models of the new White gasoline car and these are attracting much attention.

The Pacific Motor Car Co. has gathered together a fine exhibit of Stevens-Duryea models and of the Woods electric. In the Stevens there is a 60-horsepower touring car of the six-cylinder type, and a stripped polished chassis of the same model. There is a four-cylinder touring car and a four-cylinder baby tonneau, besides a roadster. There also is a handsome limousine. In the Woods electric line a closed car and an open one are being shown.

One of the interesting exhibits is that of the Thomas B. Jeffrey & Co. branch. In the Rambler line Manager Louis Bill has gathered a 45-horsepower touring car and a roadster, and also a 34-horsepower touring car. He has also a polished chassis of the latter model car which is kept in constant motion with an electric battery. Lights have been so placed that the workings of the mechanism may be closely followed.

The Franklin branch has four cars in the show ranging from the little 18-horsepower model G to the six-cylinder car. Manager McLain also has secured a detached motor which is so cut as to demonstrate perfectly and in a most simple manner the air-cooling principal for which the Franklin is famous.

The local branch of the Locomobile Co. of America has put a limousine and a touring car on the floor. It also has the Locomobile No. 1, which was driven by Jim Florida in the last Vanderbilt cup race, and this has been constantly surrounded by an interested crowd. The battered appearance of the car has given rise to some amusing experiences during the week. All kinds and classes of people have looked at the car and their remarks have not always been a source of pure delight to Manager Irving Morse.

"Is that your regular type of run-about?" asked one inquisitive soul.

"Queer that they should allow second-hand cars on the floor," remarked another.

The Pierce-Arrow is showing a handsome limousine car, all that it could hold for the week, while Cuyler Lee is doing the same with a closed Packard. He is also showing the 1910 model of the Cadillac.

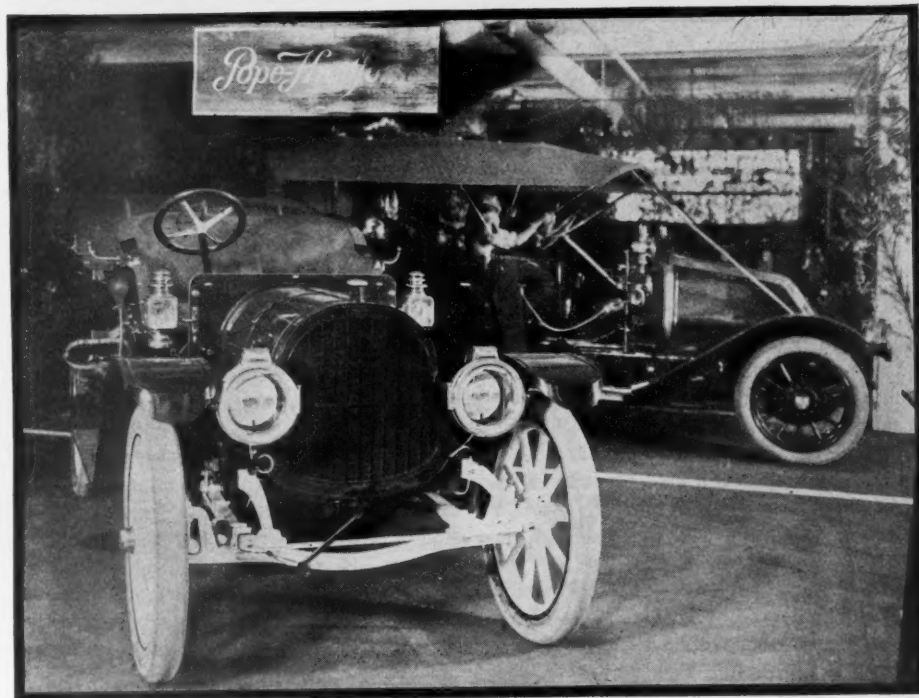
One of the busiest booths in the show is that of the Winton branch, which con-

## San Francisco Makes Big Display

tains a touring car, a toy tonneau and a polished chassis. One of the interesting features of this exhibit is the latter, with which can be demonstrated the operation of the self-starting device that appeals to every user of a motor car.

Right across the way from the Winton is the Cartercar chassis, which is kept busy early and late demonstrating the principle of friction drive. Close by is

The show has provided the opportunity for the debut of many cars new to the local market. Two models of the Lexington are being shown and the Midland, previously mentioned. The Knox has been brought out by the Reliance Automobile Co. The American Locomotive car is displayed by the Middleton Motor Car Co., and two models of the Pennsylvania are being shown by George E. Middleton. The

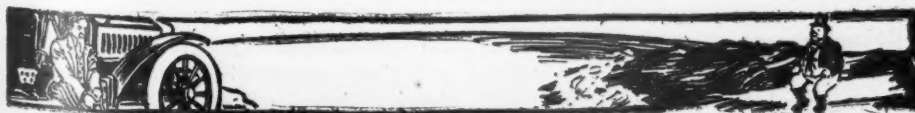


DISPLAY OF THE THOMAS, CHALMERS AND HUDSON  
POPE-HARTFORD AND RENAULT IN 'FRISCO SHOW

the only foreign car in the show, the Renault, which is exhibited by the Renault selling branch of this city. Three Maxwell cars of the 1910 models are being shown. A handsome Pope-Hartford is on display, and also a chassis of the Oakland.

Corbin, of which three models are on exhibition, is attracting attention.

Surprise has been caused by the large number of electric cars which are being shown. These include a Rauch & Lang and an R. & L. victoria; a Columbus, the two Woods, which are being shown by the Pacific Motor Car Co., and the Detroit, which is exhibited by the Reliance Automobile Co. And finally, there is the International high-wheeled motor buggy.



# TESTS OF GASOLINE AND ALCOHOL COMPARED

WASHINGTON, D. C., Oct. 25—The United States geological survey has issued a monograph on the commercial deductions from comparisons of gasoline and alcohol tests on internal combustion motors which will be of decided interest to the motor car world. The monograph is by Robert M. Strong and is the result of 2,000 tests conducted by the survey. To determine the relative economy and efficiency of gasoline it was compared with denatured alcohol. In order to determine and eliminate the affecting motor conditions as far as possible, the investigation was commenced by making comparative gasoline and alcohol tests on the same motors. These tests were repeated on other motors of approximately the same size and speed, having different degrees of compression, different methods of governing, and different carbureters.

Almost any gasoline motor with a well-designed carbureter will run as well with alcohol as with gasoline, from the standpoint of operation, except for a difference in ease of starting and in certainty of operation at low speeds. Under conditions requiring widely varying speeds the motor is less certain to operate satisfactorily at very low speed when alcohol is used, unless some special adjustment is made. The only change required for the use of alcohol in a gasoline motor, if any, is in the size of the fuel passageways. The fuel needle valve must be capable of being opened twice as wide for alcohol as is required for gasoline, and the spray nozzle must not be restricted to just the size that is required to supply the needed quantity of gasoline. The fuel passageways in a carbureter can usually be easily drilled out, and so far as producing power at constant speed is concerned the motor will be just as serviceable with either fuel. This change need not be such as to affect the consumption of gasoline, but with this change alone the consumption of alcohol will be found one and a half times to twice as much as the consumption of gasoline for the same power.

## Shows High Compression

By using alcohol in an alcohol motor with a high degree of compression—about 180 pounds per square inch above atmospheric pressure—much higher than can be used for gasoline on account of preignition from the high temperatures produced by compression, the fuel-consumption rate in gallons per horsepower per hour can be reduced to practically the same as the rate of consumption of gasoline for a gasoline engine of the same size and speed. The indications are that this possible one to one fuel-consumption ratio by volume for gasoline and alcohol motors will hold true for any size or speed, if the cylinder dimensions and revolutions per minute of the two motors are the same.

An alcohol motor is as adaptable to com-

mercial requirements as a gasoline motor, except that with the present types of carbureters the same increased difficulty in starting and in operating at very low speeds is experienced as for a gasoline motor when alcohol fuel is used. The adaptability of alcohol is such, however, that the difference, which is due to ineffective vaporization, is not necessarily permanent.

When alcohol is used in a gasoline motor with the maximum degree of compression for gasoline, the available horsepower of the motor is increased about 10 percent. An alcohol motor with the maximum degree of compression for alcohol will have an available horsepower 30 percent greater than a gasoline motor of the same cylinder size, stroke and speed. Owing to the higher explosion pressures, however, an alcohol motor should be built heavier than a gasoline motor, but the weight per horsepower may be less.

## Changes May Be Made

Some gasoline motors may be so changed that a sufficiently high compression pressure is secured to make it possible to reduce the consumption of alcohol in gallons per horsepower per hour to an equality with that for gasoline before the motor was changed; the change, however, precludes the further use of gasoline, as it can not be used satisfactorily with compression pressures much in excess of 70 to 75 pounds per square inch above atmospheric. The degree of compression may be most easily changed by lengthening the connecting rod, which changes the position of the piston at the extreme end of the compression stroke. This can only be done, however, in a motor which is not counterbored and in which the shape of the clearance space is such that the piston will not strike the cylinder head or valves. The type of connecting rod usually used for stationary motors can be lengthened very easily by putting liners between the crankpin end of the connecting rod and the crank brasses. This makes it possible to adjust the degree of compression to whatever fuel it is desired to use with but little trouble.

If the cylinder is counterbored, or if there is not sufficient room at the head of the cylinder to allow the piston to travel back far enough to increase the compression pressure to the amount desired, a new cylinder head should be cast with smaller clearance space. Attaching plates to the piston or cylinder head is seldom, if ever, satisfactory. The arrangement of the valve-actuating mechanism often determines the position of the valves, which may be such that a small enough clearance space can not be secured without almost an entire redesign of the motor. Furthermore, with the increased compression pressure required for the economical use of alcohol, the maximum pressure from

explosions or combustion will increase and will be as high as 600 or 700 pounds per square inch for maximum load when the compression is raised to 180 or 200 pounds per square inch above atmospheric pressure.

## Hard Starting on Alcohol

The increased difficulty of starting a motor with alcohol and the increased uncertainty of operation under variable speed conditions has suggested the use of gasoline and alcohol in a double carbureter, which mixes the vapors or sprays of the two fuels with air in the usual manner. Tests on two similar motors having different degrees of compression were made with such mixtures. For the two engines twenty-six and twenty-one tests were required to obtain the best time of ignition and best mixture quality—as regulated by the fuel needle valve and auxiliary air valve—for seven different proportions of gasoline and alcohol. The results obtained are not as conclusive for the test with the higher degree of compression as might be wished on account of affecting motor conditions which were known and recorded but not eliminated. The results of these tests indicate, if rightly interpreted, that the maximum thermal efficiency for mixtures of gasoline and alcohol will vary from that for alcohol alone to that for gasoline alone, when the best degree of compression is used in each case; and that the total fuel consumption will not be less than the minimum for either fuel alone and will depend on the limiting degree of compression for each different proportion. If this be true, there is no advantage in using gasoline and alcohol together except for starting and operating under conditions of variable speed; and these advantages should be obtainable through some other means, such as more suitable design of induction passageways and carbureter. Moreover, the use of gasoline in any appreciable quantity does away with many of the advantages that are obtained from the use of alcohol alone, such as safety and absence of disagreeable odors.

## Increasing Compression Limit

The fact that the limiting compression pressure for gasoline and alcohol used together always was greater than for gasoline alone suggested that possibly by substituting water for alcohol and so increasing the limit of compression a corresponding increase in thermal efficiency for gasoline could be obtained. Following this suggestion, tests were first made on a gasoline motor with various proportions of gasoline and water. So far as possible, the best results were obtained for each given proportion from all gasoline to as much water as gasoline, but no change in the thermal efficiency or rate of consumption of gasoline could be made; this result showing that the effect of the water, if



any, was balanced. Since higher compressions could be used, depending on the proportion of water, a similar set of experiments was made with one of the alcohol motors, in which the compression pressure was about 130 pounds per square inch. Again, the thermal efficiency could not be increased or the consumption rate decreased to values better than the best obtained for gasoline alone in a gasoline motor.

In general, the introduction of a small quantity of water with the fuel will prevent preignition from too high compression or overheated parts in the clearance space. The heavy explosion pound often obtained in a gasoline motor operating under maximum load may be entirely eliminated and the running of the motor made much quieter and smoother by using a small quantity of water. The shock and wear of moving parts is thus obviously reduced. If the water contains any grit, however, the cylinder and piston will soon become scored; hence, ordinarily it is not advisable to use a spray of water continuously with the air or fuel. The amount of cooling water required to keep the cylinder walls at a given temperature is diminished very noticeably when as much water as gasoline is taken into the cylinder, and the effect of smaller quantities of water is proportioned.

#### Important Results Summarized

Some of the more important results and conclusions in Mr. Strong's paper are summarized below:

The low heating value of completely denatured alcohol will average 10,500 British thermal units per pound, or 71,900 British thermal units per gallon.

The low heating value of .71 to .73 specific gravity gasoline will average 19,200 British thermal units per pound, or 115,800 British thermal units per gallon.

The low heating value of a pound of alcohol is approximately six-tenths of the low heating value of a pound of gasoline.

A pound of gasoline requires approximately twice the weight of air for complete combustion as a pound of alcohol.

The heating value of a cubic foot of an explosive mixture of alcohol vapor and air having theoretically just sufficient air for complete combustion is approximately equal to that of a cubic foot of a similar explosive mixture of gasoline vapor and air—about 80 British thermal units per cubic foot.

Explosive mixtures of alcohol vapor and air can be compressed to much higher pressures in a motor cylinder without preigniting than can explosive mixtures of gasoline vapors and air. The maximum pressure of compression that can be used without causing preignition will in each case depend partly on the quality of the explosive mixture, on the design of the motor, and the speed at which it is operated.

For a 10 to 15-horsepower four-cycle sta-

tionary motor of the usual type, a compression pressure of about 70 pounds per square inch above atmospheric was found to be the maximum that could be used for gasoline mixtures, and about 180 pounds, the maximum that could be used for alcohol mixtures without causing preignition.

The maximum compression pressure that could be used without causing preignition was in each case found to be the most advantageous from the standpoint of fuel economy.

#### Degrees of Compression

When the degree of compression is in each case that best suited to the economical use of the fuel designated, some types of gasoline motors are better adapted to the service for which they are designed than similar alcohol motors, and vice versa. The relative amount of fuel consumed being disregarded, this is also true when the degree of compression is that ordinarily used for gasoline mixtures, as when denatured alcohol is used in gasoline motors; but in general the alcohol motor is or can be so designed and constructed as to be equal to the gasoline motor in adaptability to service.

A gasoline motor having a compression pressure of 70 pounds, but otherwise as well suited to the economical use of denatured alcohol as gasoline will, when using alcohol, have an available horsepower about 10 percent greater than when using gasoline. When the fuels for which they are designed are used to an equal advantage, the maximum available horsepower of an alcohol motor having a compression pressure of 180 pounds is about 30 percent greater than that of a gasoline motor having a compression pressure of 70 pounds, but of the same size in respect to cylinder diameter, stroke and speed.

When denatured alcohol is used in 10 to 15-horsepower four-cycle stationary motors having a compression pressure of approximately 180 pounds and the motors are operated at their maximum loads, the pressures during explosion or combustion reach 600 to 700 pounds. Stationary gasoline motors, in which the compression pressure in some cases can be raised to 180 pounds, are not usually built heavy enough to withstand such explosion pressures for any length of time.

#### Controlling Engine Speeds

When any of the usual methods of governing are used to control the speed of gasoline or alcohol engines, the rate of fuel consumption per brake horsepower per hour will ordinarily be about twice

as great at one-third load as at maximum load. At the same time an excessive rate of consumption of gasoline or denatured alcohol at any given load, if due to the incorrect adjustment of the mixture quality and time of ignition only, may be as great as, but not greater, than approximately twice the minimum required before it will be noticeable from outward indications.

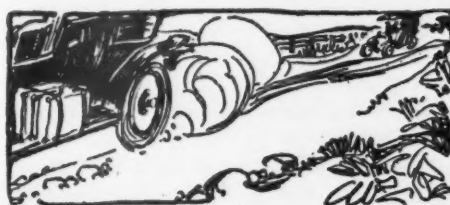
In regard to general cleanliness, such as absence of smoke and disagreeable odors alcohol has many advantages over gasoline or kerosene as a fuel. The exhaust from an alcohol motor is never clouded with a black or grayish smoke, as is the exhaust of a gasoline or kerosene motor when the combustion of the fuel is incomplete, and it is seldom, if ever, clouded with a bluish smoke when a cylinder oil of too low a fire test is used or an excessive amount supplied, as is so often the case with a gasoline motor. The odors of denatured alcohol and the exhaust gases from an alcohol motor are also not likely to be as obnoxious as the odor of gasoline and its products of combustion.

Very few alcohol motors are being used in the United States at the present time, and but little has been done toward making them as adaptable as gasoline motors to the requirements of the various classes of service. Motors for stationary, marine, and traction service, motor cars, motor trucks, and motor railway cars designed especially to use denatured alcohol have, however, been tried with considerable success.

Considerable attention is being given to the development of processes for the manufacture of alcohol from cheap raw materials which are generally available, and it seems reasonable to expect that the price of denatured alcohol will eventually become as low or lower than the price of gasoline, especially if the price of gasoline advances. It also seems reasonable to expect a greater general improvement in alcohol motors than in gasoline motors.

#### Safety and Cleanliness

Where the restrictions placed on the use of denatured alcohol are less than those placed on the use of gasoline or where safety and cleanliness are important requisites, the advantages to be gained by the use of alcohol motors in place of gasoline motors may be such as to overbalance a considerable increase in the fuel expense, especially if the cost of fuel is but a small portion of the total expense involved, as is often the case. Denatured alcohol will, however, probably not be used for power purposes to any great extent until its price and the price of gasoline become equal and the equality of gasoline and alcohol motors in respect to adaptability to service required and quantity of fuel consumed per brake horsepower, which has been demonstrated to be possible, becomes more generally realized.



# TIRE PROBLEMS THAT PUZZLE EVEN EXPERTS

**M**Y PURPOSE in offering to read a paper before the members of the Royal Automobile Club was rather to introduce for discussion certain problems which have puzzled me, and which, I think, may interest others, than to attempt to dogmatise to those whose experience and training render their opinion and judgment more valuable than my own.

The first point I desire to raise relates to the manner in which a motor or bicycle wheel is carried by the tire which surrounds it. The ordinary view seems to be that the wheel rests on and is supported by the cushion of air below it—the air, in fact, compressed between the lower portion of the rim and the tread of the tire adjacent to the ground. The objection to this simple view, when one comes to consider it, is that the rim of the wheel is completely surrounded by the air enclosed within the tire. The compressed air not only presses on the under side of the rim, forcing it up, but also on the upper side of the rim, forcing it down; and as the air chamber within the tire is continuous the two pressures are equal. Similarly, the air pressure on the anterior face of the rim forcing it back is equal to that on the posterior face of the rim, forcing it forward. Every square inch of the rim is exposed to an equal number of pounds of air pressure acting perpendicularly to its surface, while the pressure on any square inch is always opposed and balanced by that on the square inch of the bed of the rim diametrically opposite it. It is manifest, therefore, that the wheel and rim cannot be supported by the pressure of air on the rim. There is no free, no resultant pressure tending to urge the wheel in any particular direction; it is, therefore, not kept off the ground by pressure upon it.

## Illustrating a Point

To illustrate this point, I performed the following experiment: The tire of the wheel of one of my cars, weighing with its load 600 pounds, was pumped up to a pressure of 70 pounds per square inch, the wheel having previously been jacked up, with the air valve placed in its lowest position. The wheel was then turned half round, so that the valve communicated with the air chamber above the wheel. The pressure was still 70 pounds, exactly as before. The wheel was then lowered, and the tire, with its load, rested on the ground. The pressure taken with the valve inferiorly was now nearly 72 pounds, a rise of less than 2 pounds per square inch, when the air instead of the jack, had to carry the load. The same pressure of 72 pounds was recorded when the wheel was turned half round and the record was that of the pressure in the air chamber above the wheel. The increased pressure of 2 pounds per square inch on the rim

**EDITOR'S NOTE**—The following paper on "Tire Problems" was read at the Royal Automobile Club of Great Britain October 13 by D. W. Samways, M. D., M. A.

beneath the wheel pressing upwards could not possibly carry the wheel, and, moreover, was rendered neutral as a lifting force because the same increase of pressure occurred above the wheel, acting equally as a depressing force upon the rim beneath it.

Of other forces acting on the rim and wheel, there remain only the tensions of the tire walls, whose free borders are fixed under the beading of the rim. The tire is exerting an immense centrifugal pull on the rim. It is trying to burst away into space and is only held back by its walls, which are anchored to the wheel. On a wheel 870 by 90 every linear inch of the tire wall fastened under the beading of the rim, when the tire is inflated to 70 pounds pressure, is dragging centrifugally outward with a force exceeding 100 pounds. When, however, the wheel and tire are jacked up, this pull is equal all round, and there is consequently no reason for the wheel to show any preference to pull in any direction. If, however, the wheel and tire be rested on the ground, the centrifugal pull of the portion of tire resting on the ground is taken off the rim. The pressure on the tread touching the ground is transferred to the ground and supported by it, instead of as before by the adjacent tire walls which attach the tread to the rim and previously dragged downwards on the rim. The effect, therefore, of the ground in carrying a pneumatic tire and its load is to slightly increase the pressure and consequent tensions in the tire, and to relieve more or less completely the vertical component of the tension in the tire walls immediately above the ground. Above the wheel the tire walls continue to pull upward on the rim with undiminished and now unbalanced force; consequently they pull up the rim, and with it the wheel and car, whose total weight exactly equals the amount of downward tension taken off from the tire walls below the wheel. A motor wheel is, therefore, in all cases suspended from above by its inflated tire. The tire is supported on the ground below it, but the wheel is hung from the portion of tire above it and is not carried, as is so commonly supposed, by the cushion of air pressing it up from below.

## What Supports the Arch?

If the wheel be hung, as I maintain, from the tire arch above it, the next point is to consider what supports this arch. Now I have been told that the air pressure outwards on the whole tread of the tire is exactly equal to the air pressure inwards on the rim of the wheel, and that these balance one another. A writer recently

said: "The pull on the rims all round is neutralized by the pressure of the inner tube on the bed of the rim." This is obviously not the case. The tread of the tire is part of a larger circle than the rim of the wheel, and consequently has a larger surface exposed to the pressure of the air within the tire. Thus on a wheel 870 by 90 the rim measures 3 inches across, and about 88 inches round. The whole rim has, therefore, a surface area of 264 square inches. The tire tread measured, not at its margin, but where it also is about 3 inches across, is about 100 inches in length, and has consequently a horizontally resolved surface area of about 300 square inches; that is, 36 square inches more than the whole area of the bed of the rim. If the tire be pumped to a pressure of 70 pounds per square inch, the tread will have to support a centrifugal air pressure of  $36 \text{ by } 70 = 2,520$  pounds more than the centripetal air pressure which the bed of the rim is called upon to support. Of this total excess pressure of 2,520 pounds on the tread over that on the rim, one-half, that is, 1,260 pounds, is exerted on the tread above the wheel and the other half on the tread below the wheel.

## Action of the Air

Now the air in the upper half of the tire communicates with the air in the lower half across the two sections of tire which united them, one before and one behind the wheel. These sections have a transverse area of about 9 inches each, and, therefore, transmit air columns of that section, every square inch of which columns exerts a pressure of 70 pounds. That is, each air column presses upward and downward with a force of  $9 \text{ by } 70 = 630$  pounds. The two columns transmit, therefore, a force or pressure of 1,260 pounds. This coincides with the amount by which we found the pressure on the upper half or vault of the tire tread exceeded the pressure on the half rim of the wheel. In this pressure scheme the wheel itself is but a frame around which the tire is bound. The wheel receives an upthrust  $x$  from the air below it, and supports a downthrust  $x$  from the air above it, which in turn exerts an upthrust on the vault of the tire of the same amount  $x$ . The vault, in addition, receives from the two columns of air spoken of a total upthrust of 1,260 pounds, which is quite sufficient to more than carry the wheel and its load, and it is a portion of this available surplus pressure which is made use of to carry the wheel suspended from the arch to which this surplus pressure contributes support.

If one could replace the air in the tire by a steel hoop having its free ends upwards and pressing on the vault of the tire, one could probably illustrate roughly the manner in which the tire vault is supported by the air springs within the tire.



The wheel would then be held up by the thrust of the springs against the tire vault to which the wheel is attached by the tire walls, and by which it would be in consequence suspended.

If, instead of binding a complete tire to the rim, one left the upper half of the rim free and bound a half tire with closed ends to the lower half, the behavior of the forces in the tire might perhaps be more easily traced. In this case the wheel would be supported by pressure from below; that is, by the air in the half tire upon which it rested. The closed end of the half tire would be found bulging strongly upwards, and if the tire had a cross section of 9 inches, and contained air at 70 pounds pressure per square inch, it would require a force of 630 pounds before the bulging at either end could be flattened down. In fact, the pressure on the tread of the half tire is equal to the pressure on the half rim and two pressures of 630 pounds each exerted on the closed tire ends, for the tread resists and supports each and all of these three pressures. If now another half tire were fixed on the upper half of the rim of the wheel and inflated, its free ends as they tried to bulge downwards would press on the upper bulged ends of the inferior half tire, and when the air contained in the upper half tire also attained a pressure of 70 pounds per square inch all the opposing tire ends would become flat. But action and reaction are equal and opposite, and the upper half tire would be thrust upward by the horns of the lower with a total force of 1,260 pounds. The two half tires would now push each apart but that they are bound to the wheel. Directly, however, one rests on the ground the tire is compressed between the wheel and the ground, and its side walls bulge as the ground pushes them up towards the rim, instead of their being pulled down by the air thrust on the tread, which they previously had to support alone. The horns of the lower half tire can now thrust up the upper half tire, because the wheel holding the latter down is less resisted from below than formerly by the tension of the tire beneath it having been somewhat and sufficiently relieved. A wheel weighing, with its load, 630 pounds, having an air pressure in its tire of 70 pounds per square inch, would have its tire tread in flat contact with the ground over 9 square inches of surface, and the air pressure on this surface would be now supported by the ground instead of by the tire walls.

#### Wheel Lifted by Tire

This explains the manner in which the wheel is lifted by the tire. The two rising air columns in the tire thrust below on the inferior half and above on the superior half of the tread of the tire. A portion of the thrust on the inferior half, equal to the weight of the wheel and its load, becomes supported by the ground, and a corresponding portion of the thrust on the

superior half, which gets no similar support, continues to force up the arch and pull up the attached wheel.

The remarks I have made will explain the phenomenon so frequently observed of a tire bursting in its upper half. The foreman of one of the largest Paris garages, which always contains scores, and sometimes a hundred or more cars, told me that in the garage tires burst almost always in the upper half. "I speak," said he, "not of ten, but of 1,000 cases." I maintain that the part of a tire least subjected to strain is that immediately between the wheel and ground. The wheel supports it above and the ground below, while its lateral walls bear only the air pressure directly forcing them out, and not, as elsewhere, the centrifugal pull of the air-repelled tread as well.

#### Another Point of View

The problem we are discussing might be approached from another point of view. The wheel and tire might be pictured as cut by a series of imaginary planes, inclined at an angle to one another and passing through the axis of the wheel. Between any two of these planes equal portions of the tire would be cut off on opposite sides of the wheel, and similar but smaller portions of the rim. It will at once be seen that the pressures on the segments of tread and rim will balance one another, for the tread segments are equal, and act in opposition, while the same is true for the rim segments. Now, suppose that one of these tread segments rested on the ground, and exactly equalled the surface of contact with the ground necessary to carry the wheel and its load. This inferior segment which opposed and neutralized the pull of its opposite segment above the wheel would no longer oppose it. The ground takes its thrust, and relieves the adjacent tire walls of the pull they received and transmitted, so that the unopposed segment above the wheel would now be free to pull the wheel up. The size of the segment below adjusts itself in practice to the weight to be supported; other things being equal, a heavier load flattens a larger tire segment on the ground and frees a correspondingly larger lifting tire segment above the wheel effective to suspend the latter.

What I have endeavored to show for a motor car wheel must be equally true for a bicycle wheel, whose tire likewise suspends the wheel from above. The transverse section of a bicycle tire is about 2 inches, and you will find that it is pumped up to approximately the pressure employed in a motor tire, or at least to over 50 pounds pressure per square inch. The two air columns, therefore, passing upwards, one before and one behind each wheel, can together exert a lifting thrust of 200 pounds on the tire vault, and do exert it. The vault or arch of a bicycle tire is therefore capable of suspending a load of 200 pounds, or the two tires of 400 pounds, of

which only a portion obviously is called upon to support the bicycle and rider, the remainder being balanced as explained for a motor tire. In a bicycle or other wire wheel not only is the hub hung from the rim above it by the thin wire spokes between them, but the rim itself is in turn hung from the tire arch above it.

#### Higher Driving Wheels

The second question to which I desire to call attention relates to the advantage of a high tire over a low one, especially as regards its dust-raising properties. The Royal Automobile Club is constantly endeavoring to discover in what direction we must look to mitigate the dust nuisance, and I believe that the encouragement of higher driving wheels would be one step in the true direction. The tire round a wheel has to support the weight of the wheel and its load, and to do so, with a given pressure in the tire, a definite area of the tire tread must be in contact with the ground. If the length of the contact surface be short, as it necessarily must be with a small wheel, the width of contact must be increased. Hence it has been found that the small wheels at present used, especially for driving wheels, must have very wide tires. Now it is the width of contact and not the length of the contact surface on the ground which determines the amount of dust a wheel raises. A wide track obviously raises more dust than a narrow one. When the wheel is high, as in some of the cars originally made, the driving wheels can easily take tires as narrow as those on the front wheels. With a high wheel the contact surface is a long narrow oval, and with a low one it is a short wide oval for the same supporting area. I have a comparatively light car which requires tires 810 by 100 on its driving wheels; otherwise they perpetually give trouble, especially through overheating. On a much heavier car exposed to much rougher usage, I have tires 1010 by 90, and though the width of the tires is less than in the lighter car it behaves almost as if it were overtired. At the same time it raises much less dust at the same speed, making as it does a narrower track. I maintain that for heavy chain-driven cars—and all heavy cars ought, in my opinion, to be chain-driven—high driving wheels are desirable. They run much more smoothly; require narrower tires to support them, and consequently raise less dust; the tire lasts longer, as it touches the ground less often; it probably heats less and certainly cools more freely. The time of extra weight is a small factor; it is also quite easy to find room for the side door, as a glance at the illustrations of cars in our journals at once shows; and high driving wheels are infinitely more sightly than the present fat dwarf type of perambulator wheels, which convert a car into a species of rolling dachshund.

The third problem relative to tires, one affecting us all, is how to prolong their

life. The first essential in my opinion is to have as high wheels as possible on our cars. I have four cars, and my experience is that the life of a tire, other things being equal, goes largely with the height of the wheel, for reasons some of which I have suggested. Tires on large wheels, moreover, support better the application of the brake than those on small ones, for the friction with the ground is along the long axis of the oval surface of contact, and a longer and straighter stretch of tire wall supports the strain. For a similar reason the walls on large wheels probably transmit and support better the drive. For front wheels I very largely adopt the plan of fixing one of Smith's rubber treads on the tire with rubber solution. My chauffeur is now an expert at fixing these treads, and I have two or three front tires which have been in use for years. The tread, in fact, lasts longer than the canvas. These treads are more suitable probably for small than for heavy or fast cars, while in prolonged wet weather they will gradually loosen.

#### Pressure Effect on Tires

The effect of high or low pressure on the life of a tire is, I believe, still sub judice. I prefer a somewhat low pressure for my own sake, as well as for the car's. If the pressure be not too low—that is, not enough to present marked bulging of the tire between the wheel and ground—the tire is not likely to burst at the bulge; for, as I have pointed out, it is just there that it is least strained. If the bulging be severe, the tire fabric may suffer from excessive locomotion and friction, but the air pressure upon it in any position will not appreciably be raised. Flints, moreover, cut a hard tire more readily and deeper than a softer one.

Finally, I may add that a useful gauge, to examine and, if necessary, correct the pressure in a tire, may be made with a piece of string. If a tire be once correctly inflated and its contact surface with the ground measured by passing the string around it, the measurement thus taken will always be sufficiently correct. Should the string measurement be found at any time to exceed this standard, the tire should be pumped up till the area of contact with the ground corresponds in circumference with the determined length of string.

I trust that these remarks, however crudely expressed or inadequately expressed, may throw some light on the action of the forces in a pneumatic tube; and if they appear in some respects of but theoretical importance, I dare say you may have learned in life, as I have, that correct theory is seldom disappointing in its applications.



## Another Motor Plant For Detroit

**D**ETROIT, MICH., Oct. 25—Though formal announcement is withheld for a few days, it is generally understood in local manufacturing centers that the week will be featured by the announcement of another motor manufacturing concern in Detroit, the main powers of which will be F. L. Smith, vice-president of the Olds Motor Co., and Angus Smith, secretary-treasurer of the firm before it was absorbed by the General Motor Co. The company will, it is understood, place on the market in the spring a six-cylinder car with 42-inch wheels, somewhat on the style of the Oldsmobile model of that general design. It is said that the firm has an option on the factory building on Jefferson avenue, adjoining the Hupp Motor Co.'s plant. The property has remained vacant ever since the factory of the Olds Motor Co. was moved to Lansing. At the local office of Angus Smith the rumor was neither affirmed nor denied.

The Palmer Auto Co., of which Harold Palmer is the moving spirit, celebrated this week by the opening of the firm's new salesroom and garage at 1221 Woodward avenue. The firm is the most recent addition to the Detroit retail trade and will handle the Stearns car exclusively. This is the first representation which the Stearns car has had in Detroit.

Another car which has just secured representation here, after a lapse of two seasons, is the Reo, which will be handled at the new Woodward avenue garage of the Gillespie Sales Co. This firm will also make a specialty of second-hand cars of all descriptions. Both the Palmer Auto Co. and the Gillespie Sales Co. have applied for membership in the Detroit Automobile Dealers' Association, which now includes virtually every retail firm in the city.

#### Canadian Plant For E-M-F

The E-M-F Automobile Co. has completed arrangements for the establishment of a plant in Walkerville, Ont., directly across the river from East Detroit. The company has purchased the factory building formerly occupied by the Globe Furniture Co. and will put it in shape immediately for the purpose of manufacturing E-M-F Thirties and Studebaker-Flanders Twenties. In the neighborhood of 200 men will be employed immediately. The Walkerville factory is owned by a special corporation which, in addition to the directors of the original E-M-F factory, includes Frederick H. Walker and F. Harrington Walker, of the firm of Hiram Walker & Sons, distillers, of Walkerville. By the manufacture of the car in Canada the E-M-F becomes able to furnish its dominion customers with cars at a price considerably lower than would be necessary were it necessary for them to pay the import duty. Articles of incorporation of the new firm have been filed in Toronto.

The Anhut Motor Car Co. is one of the newcomers to the manufacturing industry of Detroit and already is showing on the streets its new model—a six-cylinder car of light construction. The company has secured factory room at 206-212 Howard street, convenient to the Michigan Central tracks, and expects to turn out 500 cars for 1909. State Senator John N. Anhut, a local lawyer, is the president of the concern. Mayor Philip Breitmeyer is vice president, H. H. Thorpe is secretary and Charles Lansby treasurer.

#### Buelow Has Show Contract

Hugo V. Buelow, who designed the decorations for the 1909 show of the Detroit Automobile Dealers' Association, has been awarded a similar contract to decorate the 1910 show which will be held in the Wayne pavilion the week of January 25. The vacant carbarn on Michigan avenue, between Twelfth and Vermont streets, has been leased as a workshop and an elaborate scheme of decoration is under way in anticipation of the show.

The Metzger Motor Car Co. is getting settled this week in its new factory, corner of Milwaukee avenue and the Grand Trunk tracks. The building, which formerly was occupied by the Meier Trunk Co., has been greatly enlarged, over 8,000 feet of floor space having been added, and on Monday the headquarters of the firm which had been located at Jefferson avenue and Brust street, where Mr. Metzger established years ago the first retail sales room in Detroit, were moved to the factory. Considerable machinery has been installed during the past week and the shafts are scheduled to be turning all through the factory before the week is out.

Work has been started on the new factory of the Brush Runabout Co. on Massachusetts and Oakland avenues. A novel feature of the opening of activities was the breaking of ground by a plow which was drawn by a Brush runabout, driven by President Frank Briscoe. The car used for the purpose was the one which the company sent to Denver a year ago, and which gained distinction by ascending Pike's peak.

The return to his home in Detroit this week of E. A. Moross, identified during the summer with the Indianapolis motor speedway, has started anew the rumor of a similar enterprise for Detroit, the object being, aside from racing, the securing of a testing ground for the local manufacturers, in which the necessity of observing a speed limit would not be necessary. Moross has endeavored to get the local manufacturers interested to the extent of \$500,000 and has, it is claimed, secured an option on a piece of land suitable for the purpose out Jefferson avenue beyond the Grosse Point track and handy for the makers.



## Age the Greatest Foe of Rubber

AS with man rubber has its enemies, each fighting to bring it to an untimely end, heat, oil and age, however, being the most powerful of all. But in the war for the survival of the fittest rubber has an ally, which, while its strength lasts, assists it in staving off the inevitable—sulphur. As long as this ally is on the job rubber can defy age, but once let the yellow flag go down and the end is at hand. From mold to scrap heap it is a continual fight on the part of the rubber army to hold old Father Time at bay, but of course eventually the old gentleman conquers just as he does with humanity. But it is to fight off the evil hour that the tire makers employ all their ingenuity to the utmost, and while they have not been able to bring about the surrender of Father Time they have spiked some of his guns and secured favorable terms of honorable surrender.

Tire manufacturers take every precaution to help rubber in its fight and every concern of any prominence whatever strives hard to prevent any old stock being sold over its counters. It is realized that old goods only work harm to the reputation of the firm and make dissatisfied customers, so therefore the schemes in vogue to prevent this are many. Among the clever ideas is the one adopted first by the Chicago branch of Morgan & Wright and which has since been adopted by the other houses on the "good tire" circuit. The idea in brief is a system of tags which tell the age of the tire or tube. For instance, stock coming in in January is labeled with a red tag; February a blue one, March a green one and so on through the calendar. The oldest stock goes out first, but it isn't very aged at that, for by the tag system adopted a tire never is on the shelf more than a month at a time. By this system Morgan & Wright are able to always ship fresh stock and in this manner hold up its reputation for reliability of its goods.

### Caring For Tires In Stock

Of course it is a well-known fact that age is not so detrimental to rubber when the tire is in daily use or if it is carefully kept by the concern selling it. In this connection it is worthy of note the precautions taken by a tire branch. In many branches the stock is kept in the basement where the atmospheric conditions may be carefully watched. The air must be just right to ward off possible deterioration. There must be just the right humidity in the air and the thermometer must be around 60 degrees. Under these conditions tires may be kept in stock without fear of old age. To get this humidity some use water tanks and the engineer is cautioned to watch the thermometer carefully. The necessity of the air being of the right humidity is that it can assist the sulphur which is used in curing to properly crystallize until the rubber blooms. This latter word may be best explained by stating

that when the casing first comes out of the mold it is of greenish color. Stored away under proper atmospheric conditions, the sulphur gets busy and crystalizes, gradually converting the color from the green to the gray which is so familiar to users of pneumatics. When this gray is reached the rubber is said to have bloomed.

This sulphur is the greatest ally the tire maker has. In chemically curing the crude rubber chloride of sulphur plays a most important part. Its running mate is disulphide of carbon and the pair works well in double harness. The carbon gives the necessary heat for the curing process, while the sulphur mixes with the crude rubber and makes the chemical change which converts the rubber from the chocolate brown of the crude to the familiar gray. It also gives the tire life and with it elasticity. It is well known that crude rubber can be picked to pieces with the fingers, but with the sulphur mixed with it it becomes elastic, at which stage it is said to have life.

As to the importance of sulphur one can best appreciate it by looking at a piece of rubber from which all traces of it have disappeared. It is of a dead-black hue and it is possible to gouge out little chunks with the fingers. That's when the tire is beyond all hope. In this condition the tire has lost its life and a blowout usually follows. The absence of the sulphur permits the fabric to shuffle, as it is technically known, which means that friction is produced much as one shuffles on the floor when dancing. This friction causes a strand in the fabric to snap, and that is the beginning of the end.

### Sulphur An Important Factor

Daily use of tires is a good thing and helps preserve it and keep the sulphur from crystalizing beyond the safe stage. A tire that is used a little bit every day will last longer than one that makes the same mileage at infrequent intervals. This is best explained by means of the humble rubber band. Put a band around a package of letters and place them in a pigeon hole. After they have remained there undisturbed for some time it will be found that the rubber band will pull to pieces when being removed. But if that same package of letters is pulled out each day and the band taken off the rubber will last indefinitely. So it is with the tire. The daily use keeps the rubber stretching and in an elastic condition and also keeps the sulphur on the job.

As for the other enemies of the tire, it is stated that water has absolutely no effect on rubber—it is the fabric that suffers from an aqueous attack. A new casing can stand in water indefinitely, but in the case of one that has seen some wear the rubber has been cut and the water creeps in and rots the fabric. But even at that a tire has to stand in water 2 or 3 days before it becomes water-logged. It

is this known fact that has produced a sharp practice on the part of some unscrupulous dealers who make a little pin money junking old tires. Before they are sold they are placed in a tub of water 2 or 3 days, at the end of which time they have become water-logged. In this condition they have absorbed enough water to make them weigh half as much again as originally and as the junk dealer pays by the pound he is the sufferer.

Gasoline is far from being an enemy—it really is a friend. It is factory practice to use raw gasoline to wash the crude rubber and every strip that goes into the construction of a casing first is washed with gasoline to eliminate the dirt. Often the rubber is clean but the tire maker takes no chances, fearing possible dirt from the workmen's hands.

### Oil a Foe of Rubber

But with oil it is a different story. Oil will rot rubber and your careful motorist will watch his garage floor. Leaving a car standing with a wheel in a pool of oil on the floor will have its effect and 1 day of this will render the rubber soft and the casing wears out so much the quicker. An oil-soaked section of rubber will wear faster on the road than the part that has not been touched by the oil. It looks as if the damage had been caused by a skid in which the casing has been burned. This soft condition easily can be detected after very little wear.

In speaking of heat as to its effect upon a tire, the atmosphere is not meant. Instead is meant the heat generated by friction while the tire is in use. In curing rubber a heat of 240 degrees is used, so it will be seen that the weather itself would not have much effect upon the tire. As to the effect of this friction heat it is about the same as when a tire is overheated in curing. The sulphur is destroyed and without that strong little ally the casing is almost helpless. Just as to what causes this friction tire engineers disagree. Some have the belief that it is caused by the contact of the casing with the ground, while others contend that it is air-friction inside the inner tube. It is claimed by this faction that the air in the center remains stationary while the outside of the air column circulates at such a pace that friction is generated and this friction produces the damage. It also is said that there is greater action toward the ground than toward the tube and that more heat is generated in the rear tires than the front ones. As to the merits of this controversy one hardly can take sides, leaving it as food for discussion among the experts who spend their time delving into the mysteries of the tire.



## UNCLE SAM'S MEN REPORT FOREIGN OUTLOOK

WASHINGTON, D. C., Oct. 25—Of interest to motorists are the recent communications filed by American representatives in foreign countries and published in the Daily Consular and Trade Reports.

The effect of the prevailing depression on the imports of motor cars into Brazil is shown in the following report from Consul-General George E. Anderson, of Rio de Janeiro:

The general depression which has been manifested in most lines of the import trade in Brazil during the past few years has been very marked in the imports of motor cars. The imports in 1907 amounted to 363 machines, valued at \$663,144, and in 1908 to 297, valued at \$551,682. For the first 6 months of 1909 the imports amounted to only 118, or at the rate of 236 machines for the year, a loss of about 20 per cent over last year. The machines imported from the United States in 1907 numbered fifty-four, valued at \$89,215; in 1908, forty-three, valued at \$71,441; and only fourteen for the first 6 months of 1909. Of the total of 297 motor cars imported from all countries in 1908, France furnished 139, Italy 51, the United States 43, Great Britain 36, Germany 20, and other countries 8. In the first 6 months of 1909 the total was composed of 52 from France, 20 from Italy, 14 from the United States, 14 from Germany, 6 from Great Britain, and 12 from other countries.

The relative gain in the imports from Germany during the 6 months ended June 30, 1909, is due to good agency work in the face of a depressed market. Dealers say that the German machines, which are largely for trucking work, are sold at low prices, all things considered, and that they represent efforts to keep factories going in the face of unfavorable conditions rather than profitable business. For passenger purposes the favorite cars still seem to be those from France and Italy. This, however, is largely due to superior agency and repair-shop arrangements. The American cars here are well liked, on the whole, and the sale of the higher grade American cars, particularly, could be increased if the agents here were prepared to properly care for them after they are sold. General trade conditions in Brazil are gradually recovering, and it is probable that there will be a proportional recovery in the motor car imports in the course of the year.

### Report From Nova Scotia

The following information concerning motor cars in Nova Scotia is furnished by Consul Alfred J. Fleming, of Yarmouth:

Yarmouth has only a trifle over 6,000 people, yet there is a great deal of wealth here, and this is revealed in a very pronounced manner by the number of motor cars owned. There are about 110 motor cars in Nova Scotia, and thirty-six of

these are owned in this city, Amherst having thirty and Halifax twenty-five. The thirty-six motor cars in Yarmouth cost \$44,475, thirty-two being American make, three Canadian, and one English. Of the \$44,475 invested, all save \$7,000 was spent in the United States, which is in itself an evidence that the American-made machine is popular in Canada. Of these thirty-six machines, sixteen are runabouts and twenty tourist cars. Most of them are exceptionally good machines and a few of them are first-class. Counting the 110 machines in Nova Scotia at the average price of the Yarmouth machines, makes \$135,811 invested therein in this province, and if the same average as to place of make holds good as in the case of Yarmouth, nearly all this money found its way to the United States. The roads in this province are exceptionally good for motoring and are praised by the scores of American motorists who have visited Nova Scotia. One drawback to motoring here is the law prohibiting the running of machines in the various towns and counties and municipalities on certain days. For example, motor cars cannot run in Yarmouth county, outside the city, on Saturday; Digby county has one or more prohibited days; Annapolis, Kings, Queens, etc., have days in which motoring is forbidden by local regulations, municipal and town ordinances. Tourists thus get through one county and the next day must stop all day.

### Saxony's Increased Demand

That there is an ever-increasing demand for motor vehicles in Saxony is shown by the data, just compiled in the official statistical almanac for the kingdom of Saxony, which is condensed into the following form by Vice-Consul W. Washington Brunswick, of Chemnitz:

At the beginning of 1907, 805 motor cars and 1,415 motor cycles were recorded in the kingdom, as compared with 1,909 motor cars and 2,157 motor cycles at the same period in 1909, a net increase of 137 per cent for motor cars and of 53 per cent for cycles. It is evident that the use of motor cars is more and more replacing that of motor cycles, which are now being restricted in Germany by so many regulations that the intending buyer of a motor vehicle prefers to purchase a small but comfortable motor car rather than a heavy motor cycle. The same trend is also shown in the marked increase in Saxony of the proportion of smaller motor cars. The number of motor cars of less than 8 horsepower increased in the course of the last 2 years from 475 to 1,078; that of cars with 8 to 16 horsepower from 200 to 447; that of cars with 16 to 40 horsepower from 125 to 383, while those with more than 40 horsepower fell from 5 to 1. On January 1, 1909, 111 motor cars were used for trucking as compared with 32 in 1907, a remarkable feature in the development of the commercial

use of motor cars in Saxony. Of the 4,066 motor vehicles of all kinds recorded in Saxony on January 1, 1909, but seventy-three were then used for public traffic purposes and but eleven for use in connection with the work of the municipal government, such as the fire and public works departments. As many as 2,037 were used for business purposes and 1,414 for pleasure and racing purposes.

### Situation in Egypt

Vice-Consul-General Frederic W. Cauldwell, of Cairo, furnishes the following information concerning motor cars in Egypt: The August bulletin of the British Chamber of Commerce for Egypt gives information which would seem to show an opening here for American cars of small horsepower. Previous to 1907 the customs department included the spare parts with the importation of the cars, but in that year the classification was divided into two categories, the complete car and detached parts. After dealing with the decrease in the imports in 1908, as compared with 1906, the boom year, nearly 43 per cent, the bulletin covers the motor conditions in Egypt as follows:

Apart from the point that people here cannot at the present time afford to run cars as they could a couple of years ago, it must be remembered that Egypt is not by any means a motorist's paradise. Roads up and down the country on which a motor can be used are unknown, and, therefore, apart from Cairo and Alexandria with their respective suburbs, no trade can, under existing conditions, be done with the provinces. Cairo is far better off for length of roads than Alexandria, for there the motorist can travel from Heliopolis out to the Pyramids, a distance of about 18 miles. The old overland route from Cairo to Suez can also be used to some extent. In Alexandria the motorist is confined to a run to San Stefano, 10 miles. Additional roads, however, are now being constructed both in Cairo and Alexandria, which will somewhat improve matters in this respect.

Despite the absence of facilities for making long journeys, the demand in the past, generally speaking, has been for large cars of high power and fitted up in the most luxurious fashion. Seeing that hills of any kind or size are conspicuous by their absence, and that the distances to be traveled are so limited, it seems absurd for a man to have a 40 to 60-horsepower car for ordinary purposes, unless he makes use of it for touring Europe. It has, to some extent, been a case of social rivalry, pure and simple, without much regard to utility. There is no doubt that, at the present moment, many motorists are regretting that they did not consider the latter qualification rather than the former when they made their purchases, for there are many cars in the garages today which have been standing idle for months and months owing



to the inability of the owners to pay the charges for running them. When the present financial troubles are over and money is again earned rapidly, the lessons of the past, so far as cars are concerned, will be forgotten, and the demand once more will be for expensive motor cars.

While the statistics plainly show the hold which French cars have on the Egyptian market, the actual figures are somewhat misleading, for we are given to understand on good authority that a number of cars credited to England are really of French origin, but shipped from England. The French makers were the first in the field here, and they have reaped the benefit of their enterprise. The general manager of one of the largest motor car concerns in the country recently informed the writer that there was an opening for British cars, and that he had been trying, unsuccessfully, to find a good English firm which would be willing to ship a car out on what he termed reasonable conditions, such as, for example, 50 per cent of the purchase money down, and the balance when a sale was effected.

#### Garages in Cairo

In addition to sundry small repair shops, there are two well-fitted-up garages in Cairo and one in Alexandria where repairs can be made. The charges for garaging are about \$12.50 a month for a car not exceeding 10 horsepower and \$17.50 for the larger ones. These charges include washing, cleaning, and storage. Gasoline is supplied at the rate of \$2.40 per 36 liters, which is about 27 cents per gallon. Tires do not wear as well out here as they do in England, the principal reasons being the soft, gritty nature of the roads and climatic conditions. The prices of tires run about 18 per cent to 20 per cent above quotations in England. As a rough indication of the prices at which cars are sold in Egypt, cost, freight, and duty paid, the following classifications are given: The rich man's landaulet and other similar cars, including harem cars, \$3,890 to \$5,840; the second category, from \$2,920 to \$3,890; the professional man's car, about \$975 to \$1,950. As far as we can gather, the motor trade in Egypt is beginning to brighten a little, and cars are now being sold again. For the moment, the Europeans appear to be the buyers rather than the rich young natives, and it is interesting to note that the professional classes are inclined to purchase cars for use in connection with their work; for example, out of five recent sales we understand that three of them were for doctors. The motor omnibuses and wagons in Alexandria do not appear to have been a success, for none of them are now at work. The Alexandria municipality has recently granted permission to three separate firms to each put fifty motor taxicabs on the streets. A fourth firm has sent in an application for the same privilege. The first taxicab plied for hire on July 14, and three more have since been added.

## Virginia Much Alive To Roads Situation

Richmond, Va., Oct. 25—Virginia is alive to the good roads situation and Richmond and the section of the state not included in the long route selected by the pathfinders of the New York Herald and the Atlanta Journal are not in the least discouraged because the roadway will not pass through their territory. From every part of the state the roads are being builded and though all eyes are now turned to the New York and Atlanta route, there is no doubt of the fact that roads will be laid out running into and intersecting that route in such a way as to make all of Virginia open to the motorists.

No state in the union has so many historic places of interest as Virginia and it is well known that by getting the roads in shape there can be no touring through the south without a visit to Virginia wherever a suitable road can be found. Two million dollars have been raised of late in Virginia and much of this comes from counties that are not wealthy but that see the advantage in roads as the first step toward a commerce that may yet actually rival the railroads in the days of trackless trains.

Richmond has been energetically reach-

Except in the case of private electric cars, which are entirely exempted, all motor cars in Alexandria and Cairo must be registered and numbered. The following figures relate to the regulations in force in June, 1909: Alexandria, 181 private cars, twenty-eight motor omnibuses, sixteen motor wagons, and no motor cabs; Cairo, 501 private cars, twenty-eight motor omnibuses, five motor wagons, and thirty-eight taxicabs, of which five were electrically-driven. For Cairo and suburbs the speed limit for motor cars of any description is 15 kilometers—9.3 miles—per hour. In Alexandria the limit for private cars is 15 kilometers, but in the suburbs there is no fixed limit for private cars, but one of 15 kilometers for other vehicles.

Vice-Consul-General Charles B. Perry, of Calcutta, reports as follows concerning motor cars in British India: It is interesting to note that motor cars are of comparatively recent introduction into India. As far as can now be ascertained the first car was landed in Bombay some 8 years ago, but it was not until 5 years ago that they became at all numerous. There are now 843 registered cars in Calcutta, 661 in Bombay, about 160 in Madras, with smaller numbers in other cities. French and English makes dominate the market, there being but few American cars to be seen. The railway board has ordered from England, through the Indian office stores department, a rail gasoline motor car for trial on the Kalka-Simla railway, in connection with the proposed carriage of mails by rail.

ing out toward Washington and Washington, the national capital, has been looking toward Richmond. Thus the two capitals—one that of the nation and the other that of a former nation whose history is yet filled with keenest interest to the traveler—realize that an irresistible attraction must draw the tourists toward Richmond and on to Washington after the first excitement of the New York-to-Atlanta route has passed. Not in the least discouraged by the selection of the first route tried out by the New York and Atlanta cars, the Virginia farmers are as much interested as ever in good roads. In fact many of them care no more about the route selected from New York south than for the direction of a western railroad moving toward Chicago.

It is estimated that in the state there are at least 1,000 convicts at work on the roads, and these are distributed generally. For instance the city of Danville in the extreme southern part of the state, and Lynchburg as well are building beautiful roads. For 2 years convicts have been toiling in these sections and splendid roads now run for miles out from each of these cities.

An effort to continue the building of roads is constant and if the work continues as it has done for another 10 years Virginia will open to the tourist a network of handsome routes which will touch every famous battlefield in the state and open to the sight-seer the old capital of the confederacy as well as the halls of senate and house in Washington. With the hundreds of machines in Richmond eager to work their way toward the national highway recently established the pressure that is being brought to bear on the state officials is too great to be resisted. As the motor car fever increases so does the desire among the motorists increase for new roads. Capitalists are already in line who are willing to put money behind the movement. This means an additional impetus to what the state has shouldered alone with its convict force for the past few years.

Scarcely a day passes that the sales of motor cars in Richmond do not show an increase. Visitors from all over the state are in the city almost every day looking over the various agencies' cars before buying. Though there is hardly a city that is not represented in some way with its own agency for some good motor company, Richmond presents an attractive and varied assortment of cars.

The past week brought many of these visitors who contemplate purchases and this despite the fact that the cold weather is fast approaching. There is a good demand for cars such as are used by physicians and for family purposes. In the larger cities the electric cars are beginning to have an increased sale, especially among the professional men and among those who wish cars for ordinary business and social use.



# The Readers' Clearing House



## PRESERVING PNEUMATIC TIRES

**C**AMP POINT, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age state what is the best way to take care of and preserve outer castings and inner tubes while not in use on the car. It has occurred to me that if the tires were placed in a large box and covered with pulverized soapstone, it would be a good protection. What would Motor Age advise?—Hez G. Henry.

Your idea of boxing up your tires after an effusive application of soapstone, is identical with the advice of a local tire expert on the subject, it being claimed that darkness, dryness and soapstone are the three essentials to successful tire preservation.

## FIRING ORDER IN SIXES

Bryn Mawr, Pa.—Editor Motor Age—Will Motor Age through the Readers' Clearing House give me the firing order of the leading American and foreign six-cylinder cars?—H. Croninger.

The eight foreign orders of firing are as follows: 1-2-3-6-5-4, 1-2-4-6-5-3, 1-5-4-6-2-3, 1-5-3-6-2-4, 1-4-5-6-3-2, 1-3-5-6-4-2, 1-3-2-6-4-5, 1-4-2-6-3-5. The order 1-4-2-6-3-5 is used by the Apperson, Austin, Berliet, Franklin, Lozier, American Mors, Oldsmobile, Premier, Stevens-Duryea, Stoddard-Dayton, Trebert, Welch and York. The order 1-5-3-6-2-4 is used by the Marion, Pierce and Winton. The order 1-3-5-6-4-2 is used by the Glide, National, Stearns and Thomas. The order 1-2-3-6-5-4 is used by the Acme, Ford, Mora and Napier. The order 1-3-2-6-4-5 is used by the Chadwick. The order 1-5-4-6-2-3 is used by the Peerless.

## LENGTHENING VALVE STEMS

Madison, S. Dak.—Editor Motor Age—Through the Readers' Clearing House will Motor Age advise me fully the best way to lengthen valve stems on motors where they are non-adjustable. Does not heating tend to destroy their temper?—Madison.

The best way to lengthen the valve-stems on motors is to fit a means of adjustment to either the valve-stems or the lifters. This may be done by threading either the valve-stem or the lifter and fitting to it a cap and a lock-nut; then case-harden the face of the cap which comes in contact with the end of the valve-stem or lifter by heating to a light red or yellow heat and rubbing the surface with cyanide of potassium and plunging the part into cold water. This device should be fitted to the lifter if possible. There are many motors, however, whose construction will not permit of the fitting of such a device, owing to the protruding portion of the

**EDITOR'S NOTE**—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

lifter or valve-stem being too small. In such cases, one might make a cap of steel which will be about  $\frac{1}{8}$  inch thick all around. This can be made to fit either the stem or the lifter, and should be a loose fit and case-hardened. The end of the stem then can be filed or ground down a little at a time until the proper space is obtained. If desired this cap can have a contact surface  $\frac{1}{8}$  inch thick; this will allow a little grinding off of the face when worn, and a disk of copper or sheet steel of the required thickness may be placed inside of the cap, between the cap and the end of the stem, to regulate the space. The simplest method of reducing the space between the valve-stem and the lifter is to make little square caps from brass, copper or tin and fit them over the lifters. These may be fitted without removing or lifting the valve. If the lifter is about  $\frac{3}{8}$  inch in diameter, cut from a sheet of the metal a piece about  $\frac{3}{4}$  inch square; then from this piece cut a square  $\frac{1}{8}$  inch from each corner; fold three of the laps thus formed at right angles to the surface of the square and you will have a box with one side open; slip this between the lifter and the stem so that when the fourth lap is bent down to complete the form of the box, a cap will be fitted to the lifter. These may need renewal occasionally, but this may be done so quickly and economically that the end will justify the means. Removing the valves and heating and peening out the end with a hammer is a crude method. It does draw the temper and even when again case-hardened the ends are soon battered up again and become as noisy as ever.

## FAILURE TO MAKE DELIVERIES

Middleburg, Md.—Editor Motor Age—In reading F. C. Schwend's article entitled "Investigation Demanded," in the Readers' Clearing House, Motor Age, issue September 30, I find that I am in the same fix. On April 10, 1909, I made a deposit of \$166 to a motor vehicle manufacturing company for one of its cars to be shipped promptly. I have had several promises of shipment, the last one being October 7, and no car yet. The company's correspondence I have placed in the hands of the postal authorities and they are now making an investigation of the company's fraudulent use of the United States mails. I personally

know of one man who ordered a car some time in March, 1909, and who has received it only recently. Kindly publish these remarks and if Mr. Schwend wants to take legal action against the said company let him communicate with me, for I am in for it. I shall let Motor Age know the report when received from the postal authorities. Will Motor Age inform me if a 4 by 4, or larger, opposed motor car engine would work satisfactorily as a stationary engine, and what the life of same would be as compared with a stationary engine of half the rated horsepower, both water-cooled.—Raymond K. Angel.

For stationary work larger-sized and low speed motors are used. With a low-speed motor the vibration is greatly reduced as compared with a 4 by 4-inch size running at 1,000 revolutions per minute. Your 4 by 4 motor would doubtless run 4 or 5 years with careful care and adjusting of bearings when needed. Its life would not be half that of a properly designed stationary engine.

## SPEED OF FLAME IN MIXTURE

New York—Editor Motor Age—In answer to an inquiry from Rolf Thelan in Motor Age, I wish to say that I have made no experiments on pure mixtures under the conditions mentioned, and have no record of any, though it is quite likely such have been made. In a paper entitled "An Indicator With Continuously Rotating Drum," by S. W. Rushmore and the writer, which was read before the Society of Automobile Engineers—a synopsis of which was published in Motor Age, issue of January 21, page 4—diagrams were given of some tests with stationary and motor car engines which throw more light on the time required for combustion than tests with the ordinary indicator. The indicator with which these tests were made had its drum continuously rotated by clockwork instead of being oscillated in step with the movement of the piston. This resulted in the horizontal travel of the piston being the same for all parts of the stroke, whereas the ordinary indicator drum comes to rest at the ends of the stroke, and its horizontal movement near the ends is so small that the elapsed time of combustion cannot be accurately measured. In the diagrams accompanying the paper referred to, the length of the stroke can be quite closely determined from the general form of the card. For example: On scaling Fig. 15 the power stroke is seen to be about  $\frac{1}{4}$  inch long, and the horizontal distance from ignition to the peak of the card is  $\frac{1}{8}$  inch. In other words, the time elapsing between the spark and the point of maximum pressure is 1-10 of a revolution, or 36 degrees on the crank circle. In this test the



car was running about 50 miles per hour, which with 36-inch wheels and gear ratio of two and five-eighths to one gives an engine speed of about 1,225 revolutions per minute, or over twenty revolutions per second. One-tenth of a revolution therefore would be 1-2,000 second or .0005 second. This engine has a bore and stroke of 5 and 6 inches respectively. The compression was between 60 and 75 pounds, probably nearer the former, owing to the speed. In the 4-inch cylinder, named by the reader, using a clean mixture, the maximum pressure should be attained materially sooner, quite possibly in 3-1,000 of a second. This, however, is only conjecture. I might point out in closing that tests have shown the most suitable ratio of gasoline vapor to air to be by weight—not volume—from eighteen to one to twenty-four to one, the leaner mixture being suitable for high speeds. I presume Mr. Thelan intends to use the most suitable mixture. With a very rich mixture the flame propagation would be greatly retarded and the efficiency reduced.—Herbert L. Towle.

#### DRIVES FATHER'S CAR

Van Horne, Ia.—Editor Motor Age—I am only 9 years old, but drive my father's No. 101 Moline car, which had a perfect road score in the Glidden tour. I drive the car very fast at times, but it does not take strength so much as judgment.—Marie Wicke.

#### DOUBLE HORSEPOWER RATINGS

Simsbury, Conn.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions: 1—What was the mode of the American car in the recent big car race at Lowell, Mass., and was it chain or shaft-drive? 2—Does Christie's front-drive car steer with the front wheels? 3—Why do manufacturers give two ratings to their cars?—C. W. Schwartz.

1—The American car in the Lowell race had cylinders with 5¼-inch bore and 5½-inch stroke with one set of valves operating by rockerarms. It is a shaft-driven car. Motor Age is unable to give the

exact name of the model. 2—Walter Christie's front-drive car uses the front wheels for steering. 3—Manufacturers give two ratings for their cars for various reasons. For example: A motor rated at 40-60 horsepower may generate 30 horsepower for ordinary touring, but will show 60-horsepower with the crankshaft speed at maximum. Frequently double ratings are given to show the extremes of the flexible range of power.

#### TRUCK VS. HORSE COST

Des Moines, Ia.—Editor Motor Age—Can you give me any information regarding the comparative cost of motor delivery wagons and horse-drawn vehicles, that is, comparative cost of maintenance in proportion to the amount of work accomplished? I would like to get the general comparative basis, also the individual experience of large concerns employing a number of wagons.—R. J. Clemens.

It is quite difficult to get the exact data you want because you wish to know the cost for amount of work done. It is practically impossible to secure from operators of cars the exact amount of work done, as the loads are changing every 10 minutes during a delivery or a collection. Such data on work done could only be procured where a truck is operated on a definite route, such as between a railway depot and warehouse where the load would be weighed each time. The following figures have been carefully compiled on the performance of Knox trucks: The cost of operation and maintenance of a 1,500-pound delivery wagon is \$107 per month. The interest on the investment and depreciation is \$21.33, making a total monthly expenditure of \$128.33. The cost of operating a 1,500-pound horse-drawn delivery wagon to cover 50 miles a day, which is the same radius as the motor car is figured on, would require at least four horses and two and one-half wagons with two and one-half drivers; this would make a total outlay of \$191, with \$28 for depreciation and interest, the result being a saving of \$90.67 per month in favor of the motor

delivery. For the 1½-ton truck, with an operating radius of 40 miles per day, the monthly cost of operation, including depreciation and interest, is \$200.33, as compared with \$347.17 for two and one-half horse trucks of 2-ton capacity each, these being figured on a working radius of 16 miles per day. Six horses would be required to keep these trucks in operation. For a 3-ton truck, with a 40-mile radius, the total cost is \$244.33 as compared with \$378 for two and one-half horse-drawn trucks with a radius of 16 miles per day. This gives a credit to the motor truck of \$133.67 per month. For a 5-ton motor truck, operating from 30 to 35 miles per day, the monthly cost is \$267. For 5-ton horse-drawn trucks the cost of operation for the same time has been carefully estimated at \$408.

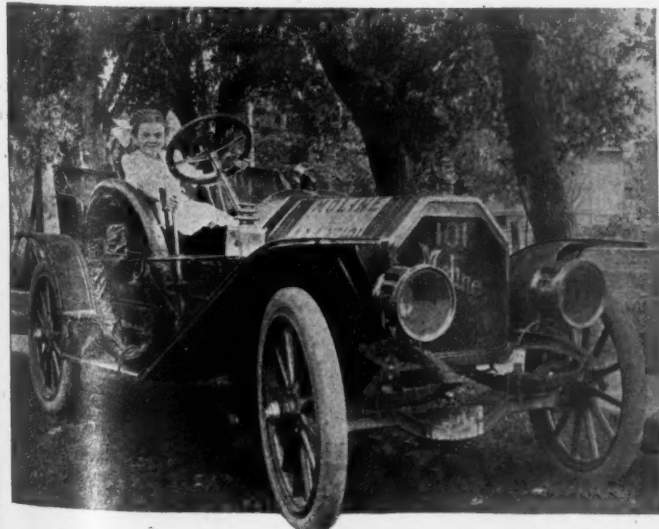
#### BAD TEXAS ROADS

San Angelo, Tex.—Editor Motor Age—I am sending herewith a photograph showing the road conditions at San Angelo, Tex., during the recent heavy rains. The car was mired so deep that it had to be pulled out by means of a block and tackle combined with the power of the engine as illustrated.—Ben C. Cole.

#### REO AND POPE-HARTFORD

Bardstown, Ky.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me the weight of the 1910 40-horsepower Oldsmobile, the \$2,000 Haynes car, Chalmers-Detroit 40 and the six-cylinder 40-horsepower Thomas? Do valves in the head increase the efficiency of an engine 25 per cent? What is the difference between the valves in the 1910 Reo and the Pope-Hartford model T?—Claude W. Wilson.

Motor Age is unable to give the weight of these different cars in touring equipment, as they have not been officially weighed in conjunction with reliability or other tests this year. Valves in the head increase motor efficiency providing the waterjacketing in the valves is well carried out. One or two manufacturers who have conducted careful investigations as



MARIE WICKE, WHO DRIVES HER FATHER'S MOLINE CAR



ROAD CONDITIONS AT SAN ANGELO, TEX., AFTER HEAVY RAINS

to the increased efficiency have reported an increase of 15 per cent over the L or T-head type. In the Pope-Hartford both intake and exhaust valves are in the cylinder heads, whereas in the Reo the intake valves are in the cylinder heads but the exhaust valves in a side chamber at the right. In the Pope-Hartford both intakes and exhausts are operated by rocker arms, whereas in the Reo only the intakes are so actuated. The Reo was described in *Motor Age* August 12, pages 30, 31, 32 and 33. The Pope-Hartford was described in *Motor Age* September 30, pages 22 and 23.

#### SHAFT DRIVE IS GAINING

Toledo, O.—Editor *Motor Age*—Will *Motor Age*, through the Readers' Clearing House, answer the following questions: 1—What are the names of the motor cars manufactured in France, Germany, Belgium, Holland and Italy? 2—What is the tendency abroad in regard to chain-drive cars and shaft-drive? 3—Does *Motor Age* know of any cars in this country using chain-drive exclusively, besides the Pope-Toledo, Simplex, Chadwick, Petrel and Brush?—H. L. Russell.

The list of names of manufacturers of motor cars in France, Germany, Belgium, Holland and Italy is too great to print here. Abroad the tendency is entirely toward shaft-drive at the present time, except in some of the largest cars where side-chain is used. In addition to the cars you mention the Empire, made in Indianapolis, uses chain-drive exclusively, as do several of the motor buggy types.

#### WHY ENGINE BALKED

New York—Editor *Motor Age*—In *Motor Age* of October 21, page 22, G. Thompson questions the story "Why the Engine Balked" in your October 7 issue, asking if it is not an error to state that the closer the adjustment of the contact screw the more current is drawn. As the undersigned wrote the story in question, and therein described his own experience, it is perhaps in order to explain that the ignition apparatus used was the Atwater Kent spark generator, and that this device behaves precisely as described. That is to say, the closer the setting of the contact screw the longer is the interval of contact, up to a certain maximum defined by the characteristics of the system. By slackening back the contact screw the contact period can be diminished to zero. Owing to this peculiarity, users of the Atwater Kent ignition apparatus customarily adjust for a short contact with fresh cells, and adjust closer as the cells run down. In my own case I had neglected to slacken back the contact screw when putting in fresh cells, which explained the rapid exhaustion of the latter. It is, however, a fact that with ordinary vibrator coils a close setting of the contact screw draws more current than a less close setting, provided the closer setting involves greater tension of the vibrator spring, as is usually the case. That is to say, if a certain set-

ting the contact screw makes a very light contact, a small magnetic intensity will suffice to overcome the spring tension and cause the vibrator to break contact. If, however, the contact screw is screwed down closer against the resistance of the vibrator spring, a much stronger magnetic intensity is required to overcome the increased tension of the spring. This greater intensity is supplied partly by the reduced distance between the core and the button or armature, but there is still a considerable excess to be made up by augmented magnetic strength of the coil itself. As the coil builds up by degrees, it follows that in the former case contact is broken before the flow of current in the coil has attained its full strength, whereas in the latter case the current may have attained its full intensity before contact is broken. It is a matter of common observation that screwing down the contact screw increases the current consumption greatly with but slight increase in the length of the spark. This is readily demonstrated by putting a battery ammeter in the circuit.—Herbert L. Towle.

#### SCAVENGING FOUR-CYLINDER

Ames, Ia.—Editor *Motor Age*—In regard to Albert Rossum's sketch of scavenging a four-cycle motor, shown in *Motor Age*, issue October 21, I would submit the following: Cooling flanges are about the right distance apart, but only about half deep enough. The internal volume of the crankcase should be made just as small as possible to secure higher crankcase compression. There should be a more rapid flow of air through the by-pass and more complete scavenging of the cylinder, and the rotating valves should be fully opened when the by-pass port opens. If the exhaust port opens one-fortieth of a stroke earlier than the intake or by-pass port and is made long enough, the pressure in the cylinder will fall nearly or quite to atmosphere by the time the intake or by-pass port opens. There will be no tendency of the exhaust gases to go through the by-pass port unless a poor mixture causes slow burning, even if this should happen, there would be no harm done. The gases would be forced back again into the cylinder, mixed with the air and the greater part of the mixture expelled through the exhaust port X. Both intake or by-pass exhaust ports should extend about 140 degrees around the cylinder and be separated into three or four sections by bridges of 10 or 15 degrees circumferential width. Make the deflection follow the by-pass port around, keeping in from the walls as far as port is high, and bringing the ends up to the cylinder walls. Better results would be obtained if the exhaust and intake valves were considerably larger. One would get more power, better cooling and better efficiency. One cannot throttle the intake any for exhaust gases will be sucked back through F, if F is connected to a pipe. If F is left open to the air, as shown, air will be sucked

through F, making the mixture too thin unless the fuel valve be readjusted. In case the fuel valve were readjusted to keep the mixture of proper proportions, the cylinder would be full of properly-mixed gas and no throttling effect would be secured. The H. H. Franklin Mfg. Co. uses a check valve in its auxiliary exhaust port to prevent any return of exhaust gases through it. This is not necessary, however, if the engine is not to be throttled. The Gade Brothers, of Iowa Falls, Ia., leave the auxiliary exhaust open to atmosphere and without any valve. They use hit-and-miss governing and not throttling. One would do well to study their design as regards proportions of cooling flanges. With the changes suggested the engine would cool without the aid of a fan if cylinders were 6 inches or less in diameter and speed 450 revolutions per minute or less, providing room be well ventilated.—R. E. Davis.

#### STANLEY STEAMER ECONOMY

Editor *Motor Age*—To a subscriber very much interested in *Motor Age*, will it give the following information: In *Motor Age*, issue September 23, page 16, under the caption "England Tells What It Thinks of American Cars," in the second column it states: "The Stanley steam car finds its market, however, chiefly with the man who has no craving for speed; but requires for a moderate outlay a quiet, reliable and foolproof car. The Stanley would certainly sell better were more publicity given to it." I question the statement, "who has no craving for speed." Has it not been repeatedly proved that regular stock Stanley steam cars are far speedier than any regular stock gasoline car selling at anywhere near the same price? Has the Stanley company ever made public its reason for not advertising? Does the Stanley still hold the world's record for a mile on a straightaway track? Can *Motor Age* give me the average mileage I could get on a gallon of gasoline with a 20-horsepower 1,900-pound Stanley steamer on city streets?—R. T. Craigie.

You can get from 10 to 11 miles on the gallon in level country with the Stanley steamer. This car holds the mile straightaway made at Florida, which was in :28 seconds. *Motor Age* has not any knowledge regarding the company's attitude on publicity.

#### SELLING UNLICENSED CARS

Cleveland, O.—Editor *Motor Age*—As a subscriber of *Motor Age* I would ask for some information in regard to the rules of the A. L. A. M. relative to agents handling licensed and unlicensed cars. Does the association prohibit an agent from handling both?

Up to the present the A. L. A. M. has prohibited its agents from handling unlicensed cars, and it is expected that this policy will be more rigidly pursued in the future. The association makes conservative investigations of all such cases.





# Legal Lights and Side Lights



## CONFLICTS WITH STATE LAWS

JUDGE KLENE in the court of criminal correction has declared every city ordinance regulating the speed of motor cars in St. Louis to be unconstitutional and void, owing to a conflict with the state laws. This decision was made in the case of two chauffeurs arrested for exceeding the city speed limit of 8 miles an hour, and immediately after the court passed upon the case a motion was sustained to dismiss twenty-two other cases ready for trial. The judge's decision, while giving motorists the right to greater speed within the city, is not looked upon with favor by the St. Louis club. Under the city ordinances violation meant only a fine, while the state law provides a jail sentence for the second and all subsequent offenses, the maximum being 1 year. City Attorney Anderson has announced he will appeal from Judge Klene's decision, but until the case is settled in the higher courts, Chief Creeey says all prosecutions must necessarily be under the state laws. The situation is causing a great deal of anxiety to members of the St. Louis Automobile Club. A few months ago members of the club prepared to test the city ordinances upon the very point on which Judge Klene decided the chauffeurs' cases. At that time and before any definite action was taken, it was pointed out that prosecutions under the state laws would be much more annoying. So, just in time, a suit pending on appeal was dismissed, and the original fine in the city courts paid. Many St. Louisans would prefer the hazard of paying a heavy fine, even though they might have their speed curtailed, to the possibility of going to jail. But now, until the case is appealed and decided, and probably even after that, they cannot exceed the state speed limit without laying themselves liable to a heavy penalty, and when once convicted, without a possible term in jail. Under the city ordinances, the speed limit in the business section has been 8 miles an hour, and in the outlying districts 12 miles an hour. The state law provides the same limit downtown, but permits a speed of 15 miles in the suburbs and on county highways.

## GETS ROAD RIGHTS

Because Mrs. William A. A. Brown, of Richmond, Mass., insisted on knowing her rights from authorities higher up the motorists in and about Lenox in one of the most attractive spots of the Berkshires are now allowed to motor over one of their favorite roads. Some time ago the selectmen closed a portion of road that leads between Richmond and West Pittsfield. The notices were put up notifying motorists that their cars were excluded and

they allowed the matter to go without protest, although they were disappointed. Mrs. Brown, however, was familiar with the Bay State motor laws and she thought that there had been no hearings, etc., and so she wrote to the state highway commission. In a few days she got a letter stating that the commission had not authorized anyone to close that road and that she could use it at any and all times. Needless to say she has done so and all the motorists thereabouts are delighted with the outcome.

## SOME COMMON SENSE LAWS

Mayor Simon, of Portland, Ore., has signed an ordinance passed at a recent session of the city council governing traffic and it is now in full force. It is said to be as simple as any of the kind ever put in effect in any city of importance, and it is believed that it will enable the police to control the situation effectively, and that congestion will be greatly lessened. The ordinance was immediately put in effect upon signature of the mayor on account of Portland's streets being in a badly congested condition, partly due to the large number of motor cars which are daily being added to. In many ways the Portland ordinance differs from others. Probably the most radical and one that will be the most appreciated by motorists is the section which provides that "no person shall drive a vehicle that is so covered or that is so constructed as to prevent the driver thereof from having a sufficient view of the traffic following and at the sides of the vehicle." Another good section is that which prohibits vehicles standing backed up to the curb unless actually loading or unloading. The most interesting clauses of the new law are as follows:

No vehicle shall stand backed up to the curb except when actually loading or unloading, and if said vehicle is horse-drawn and has four wheels, the horse or horses must stand parallel to the curb and faced in the direction of traffic, but no vehicle shall stand so backed up if it interfere with or interrupts the passage of other vehicles or street cars.

No vehicle shall back to make a turn in any street, if by so doing it shall interfere with other vehicles, but shall go around the block or to a street sufficiently wide to turn in without backing. This will be considerable of a hardship, as Portland's streets are for the most part very narrow.

Vehicles of the police and fire department, vehicles carrying United States mail and ambulances and funeral processions shall have the right of way in any street and through any procession.

Vehicles and street cars going in a northerly direction or southerly direction shall have the right of way over all vehicles and street cars going in an easterly or westerly direction.

No vehicle or street car shall so occupy any street as to interfere with or interrupt the passage of other street cars or vehicles.

No vehicle shall be driven during crowded traffic hours on any cross street, where there are car tracks, except for such distances as may be reasonably necessary to reach the building to which it is going.

A vehicle waiting at the curb shall promptly give place to a vehicle about to take on or let off passengers.

No person shall remove a wheel, pole shaft or any other part of a vehicle or any part of the harness likely to cause accident if the horse

or horses start, without first unhitching the horse or horses attached to said vehicle.

No person shall drive a vehicle that is so covered or that is so constructed as to prevent the driver thereof from having a sufficient view of the traffic following and at the sides of such vehicle.

No person shall drive or conduct any vehicle in such condition, so constructed or loaded as to be likely to cause delay in traffic or accident or injury to man, beast or property.

No person shall ride upon the rear end of any vehicle without the consent of the driver, and when so riding no part of the person's body shall protrude beyond the limits of the vehicle.

The word vehicle includes equestrians, led horses and everything on wheels and runners.

The word driver includes the rider and driver of a horse, the rider of wheels and the operator of a motor vehicle.

Drivers of vehicles and street cars must at all times comply with any direction by voice or hand of any member of the police force, as to stopping, starting, approaching or departing from any place.

It shall be unlawful for any person operating any bicycle, tricycle, velocipede, motor-bicycle, motor car or any machine or horseless vehicle to use thereon, while traveling through the streets, any instrument for the purpose of giving warning which shall produce a sound of an unusually loud, annoying or distressing character, or such that will tend to frighten pedestrians or animals, it being the intention to prohibit the so-called sirens or similar instruments for the purpose of producing unusually loud, or distressing or annoying sounds.

Any person violating any of the provisions of this ordinance shall upon conviction thereof in the municipal court be punished by a fine not exceeding \$500, or by imprisonment of not exceeding 90 days or by both such fine and imprisonment.

## ON LIABILITY INSURANCE

Attorney General Byers, of Iowa, has issued a statement to the effect that he has been misquoted with reference to the ruling which he gave to State Auditor Blakely respecting insurance against motor accidents. He held that it would be illegal to insure an owner against suits for damages for accidents which were a result of his own carelessness or negligence, but that motor car accident insurance was legal and allowable in many instances under the employers' liability accident insurance law. The attorney general says in his ruling to the state auditor that "the motor car owner may be indemnified against almost any possible liability except in the case of accidents occurring while the owner is operating his machine for pleasure."

## HOLDS OHIO LAW VALID

The Ohio supreme court in a recent decision held that the recently enacted state motor law is constitutional. The matter was tested in an action brought by T. N. Drolesbaugh, of Crawford county, who was arrested for operating a motor car without a license. He defended himself by claiming the state law was unconstitutional because it made arbitrary discrimination against motor vehicles, which was an improper use of the police powers of the state and violated article 1, section 2, of the Ohio constitution. The lower courts held the law valid and the supreme court reaffirmed the decisions. Drolesbaugh will have to comply with the law.

**T**HE Studebaker-Garford next year as built in the factory's plant, generally known as the Garford factory, at Elyria, O., will be confined to one model instead of two. This one is designated the Studebaker-Garford and is a continuation of the present 1909 chassis with a few minor changes in the transmission, steering gear, lubrication and drive system. The present intention of the Studebaker Automobile Co. is to build 1,000 of these chassis for next year at the Garford factory, the entire factory capacity being devoted to this model.

The motor is an out-and-out factory product having cylinders cast in pairs with opposite valves, the bore measuring  $4\frac{3}{4}$  inches and the stroke  $5\frac{1}{4}$  inches. The waterjackets and valve chambers are integral with the casting proper. Scarcely an alteration has been made on it for next season and its leading novelty continues to be the Bosch magnetic plugs, giving a low-tension make-and-break spark in place of the generally-used high-tension or jump spark system. For the magnetic plug system all the parts that are needed is a special Bosch low-tension magneto, four magnetic plugs with four wires from the magneto to them and a fifth or cutout wire running to the dash. It is one of the simplest of wiring systems without a solitary inch of high-tension wiring. From the magneto located on the right front of the crankcase four wires rise to the front end of a fiber tube carried horizontally along side the cylinder heads, from which a wire passes to each magnetic plug.

#### Use Magnetic Plugs

Each magnetic plug contains a coil winding through which the magneto current passes. Within the coil is a soft iron core and by magnetizing this core a hammer part is actuated which in conjunction with an anvil part gives practically the same make-and-break system as used on any low-tension ignition system. Previous to its adoption of this system a year ago the company carried the make-and-break parts in the cylinder ports, but now the motor is as clean as in any dual high-tension ignition system.

A slight alteration in the lubrication system is the adoption of a Lavigne multi-feed oiler located as heretofore on a bracket over the flywheel and gear-driven from a spur gear on the end of the camshaft. The six oil leads connect with the three crankshaft bearings, the pumpshaft, the filler to the crankcase and the gearbox. A metal shield covers the top of the flywheel to prevent the throwing of any overflow oil by the flywheel. Where lubrication direct from the oiler is not feasible

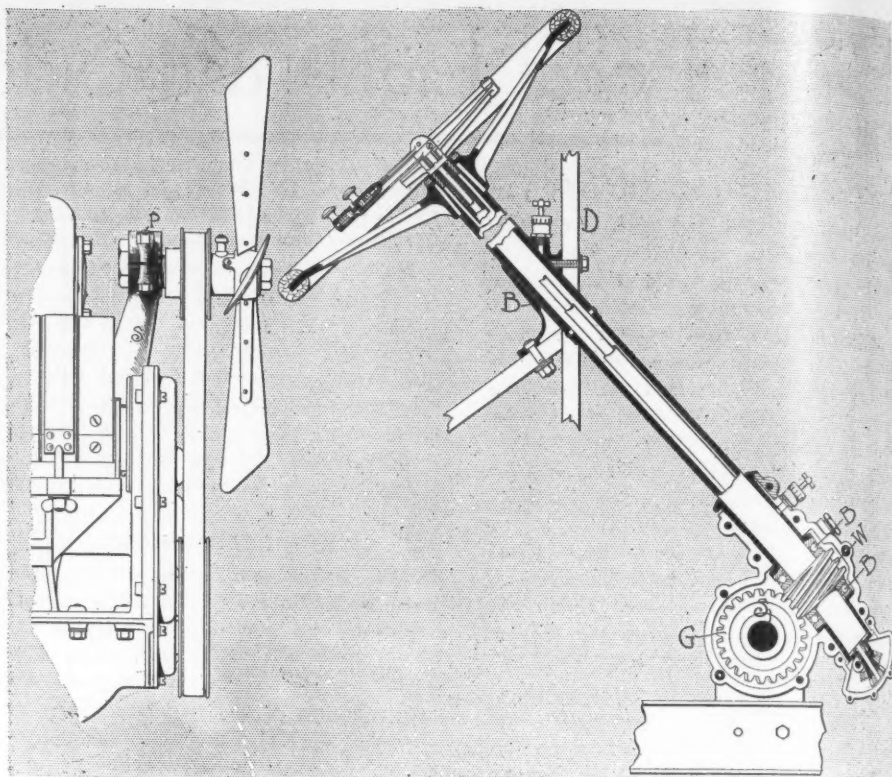
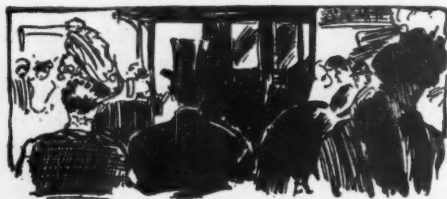


FIG. 1—NEW FAN SUPPORT

FIG. 2—NEW STEERING GEAR

## Studebaker-Garford Forty Chassis

### The Selective Gearset Has Been Re-designed

compression grease cups have been fitted.

The Studebaker cooling system is a water flow maintained by centrifugal pump on the crankcase at the left. From this a Y manifold leads to the jackets—one branch to the front cylinder casting, the other to the rear, the water entering the jacket beneath the exhaust valves which is the hottest point. The return pipe leads from the jacket heads to the radiator tank. A slight change has been made in the cooling fan mounted back of the radiator. The fan for next year is mounted adjustably on a hollow standard which rests on the crankcase. As Fig. 1 shows, this support S in the eyehole at the top where it takes the eccentric fan support, has a pinching screw P to clamp the eccentric bushing at any desired point to hold the belt tension.

#### Use New Carbureter

A new design of carbureter is used, illustrated in Figs. 3 and 4. It is of the separate float-feed type with auxiliary air valve establishing an automatic regulation of the flow of gasoline through the spraying nozzle. The main air or fixed air entrance A is guarded by a starting valve controlled by handle H from in front of the radiator, this valve ordinarily held open by the spring N simply closes or nearly closes this fixed air entrance when starting thereby bringing more suction to bear on the gasoline in the nozzle and so producing a richer mixture. A metal float F in a separate chamber regulates the gasoline entrance through the passage G from the fuel tank, the needle valve M resting on top of the float which is kept centered

by the guide H. From the float chamber the gasoline rises in a 45-degree angle pipe to the nozzle N which is located in the smallest-diameter part of the venturi shaped choke tube. Above this venturi shaped choke strangling tube is the mixing chamber C which is adequately waterjacketed, water entering and leaving by openings W, and the waterjacket spaces J entirely surrounding the mixing chamber, thereby preventing condensation of the mixture. In the top of the mixing chamber is the butterfly throttle T, located at the junction of the manifold branches to the cylinder castings. The auxiliary air arrangement appears in Fig. 4 the spring controlled valve X being housed in an integral extension of the chamber C. The valve is a mushroom type ordinarily held closed by two springs S1 and S2, the use of two springs being to more perfectly control the workings of the valve for all speeds. One spring opens before the other and as soon as its tension is entirely overcome, the increased suction of the motor causes the compression of the other spring

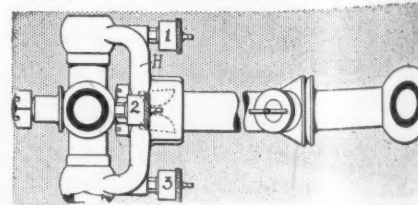
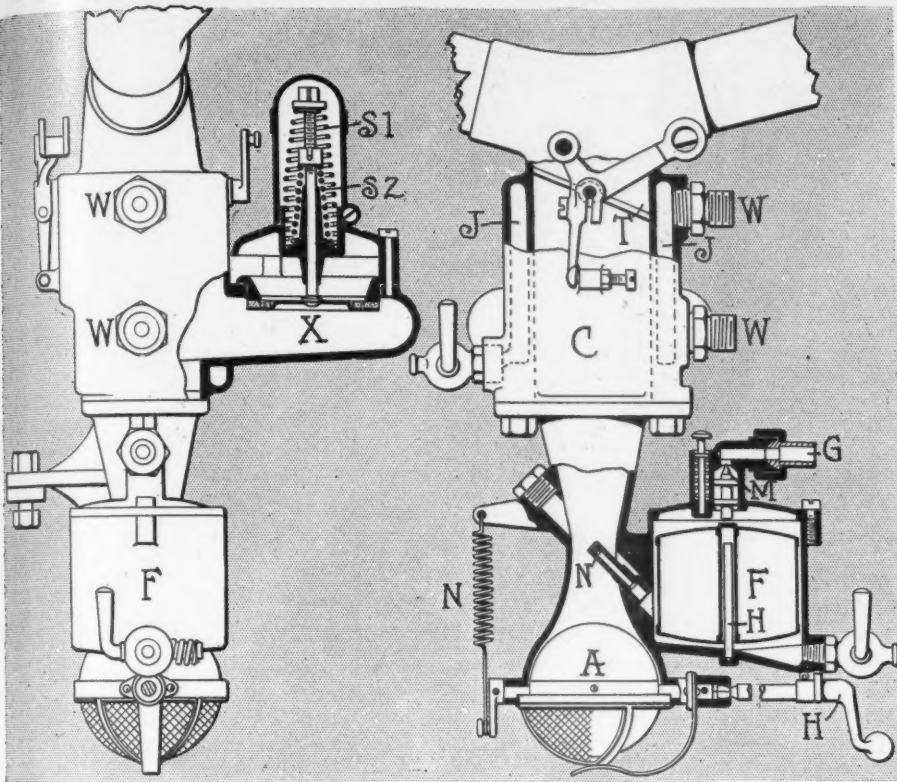


FIG. 3—STUDEBAKER UNIVERSAL





FIGS. 4 AND 5—TWO SECTIONS OF STUDEBAKER'S NEW CARBURETER

## Shows Several Detailed Improvements

### A New Carbureter Added Steering Gear Changes

and the additional opening of the valve. The valve is leather-faced to reduce noise and the two springs S1 and S2 are encased. Carrying the carbureter well up on the motor side brings it closer to the intake valves, makes the mixture control more responsive and prevents condensation in the manifold.

#### Gearset Has Been Redesigned

The gearset has been redesigned so now both main and countershafts are in the same vertical plane with the mainshaft on top. The gears are housed in a one-piece aluminum casting carried in rear of the clutch on a three-point support on the sub-frame members. The set operates selectively with four forward variations giving direct on third speed and fourth speed being faster than direct. The mainshaft carrying the sliding units has six integral leathers on which these gears slide, this construction being preferable to the squared shaft or the use of one or two detachable keys. The two sliding gearsets on the mainshaft are controlled from

the conventional side lever, the front gear unit giving direct and fourth speeds and the second unit low and second speeds. These gears are teeth rings bolted to flanges. Both shafts of the set are carried on F and S annular ball bearings. The clutch in the flywheel is a leather-faced cone.

From the transmission a propellershaft with two universals transmits to the rear axle. A new type of universal, illustrated in Fig. 5, is used. It consists of a center cross C uniting with a couple of T ends, one H being on the front end of the propellershaft and the other, not shown, being carried on the rear end of the mainshaft of the gearset. Four compression grease cups, 1, 2, 3 and 4, are used, one on each arm of the two T pieces. Paralleling the propellershaft is a torsion rod supported at its forward end between upper and lower spring cushions.

#### Back Axle Floating Construction

The back axle is a floating construction with differential and driveshafts carried on cup-and-cone ball bearings, but the pinion-shaft carried on annular ball bearings. To add strength to the housing which supports the entire weight of the car the sleeves in which the axle driveshafts rotate are tapered from where they are brazed and pinned into the differential housing to where they carry the road wheels. Spring seatings are revolvably mounted on these sleeves and grease cups are fitted to these seatings.

In the running gear the major change is

the new worm-and-gear steering gear, Fig 2. The worm W is a pressed fit on the column, being keyed as an additional precaution; and the gear G is formed integral with its shaft S. The worm W operates between upper and lower ball thrust bearings B. Using a gear G instead of a sector allows of resetting the wheel so different teeth mesh with the worm in case of wear. The radius arm is a taper fit on the end of the shaft S. Having two keyways permits of setting it in two positions in case of wear. The gear G is carried on an eccentric bushing which also allows of taking up and making adjustments for wear. The steering wheel has been increased in diameter from 16 to 18 inches. Additional support is given the column by a bracket B where it passes through the dash, this bracket not only bolting to the dash, but also to the sloping floor boards. The throttle and spark controls are on top of the steering wheel, one mounted on a tube concentric with the steering column and the other on a rod extending through the column.

#### Side Members Arch at Rear

No change has been made in the side frame members, these having an arch above the rear axle. Frame support is through semi-elliptics in front and a platform suspension in the rear, the cross-member of which anchors to a bracket extending rearward from the back crosspiece of the frame. Braking is through double rear wheel sets, one expanding, the shoes being faced with two 8-inch cast iron sectors fitted with cork inserts. The external set is thermoid-lined and the drums on which both sets operate are 13 inches in diameter and 2½ inches wide. The front axle is an I-beam forging with cup-and-cone ball bearings on the steering spindles for carrying the roadwheels. The wheelbase remains at 118 inches, front tires are 36 by 4 inches, rears are 4½-inch sizes and the tread is standard.

A change in the chassis flooring is the use of wood for the front floor and the toe-board in place of cast aluminum used this year. The dash is a straight wood affair with not an incumbrance other than the cutout plug for the electric system.

The Studebaker company offers three bodies for this chassis—a runabout, a tourabout and a seven-passenger touring car. In the touring car gasoline flow to the carbureter is by gravity but pressure feed is used on the runabout and tourabout. On these the regular pressure is maintained on the gasoline tank and on the dash is an auxiliary fuel tank with a float control and from this tank the flow to the carbureter is by gravity.

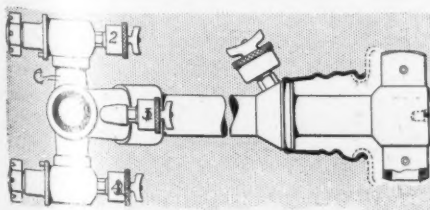
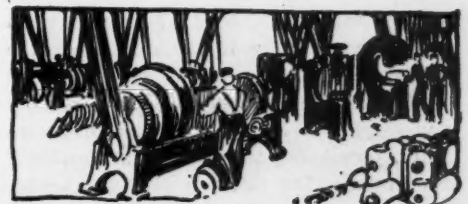


FIG. 6—STUDEBAKER UNIVERSAL

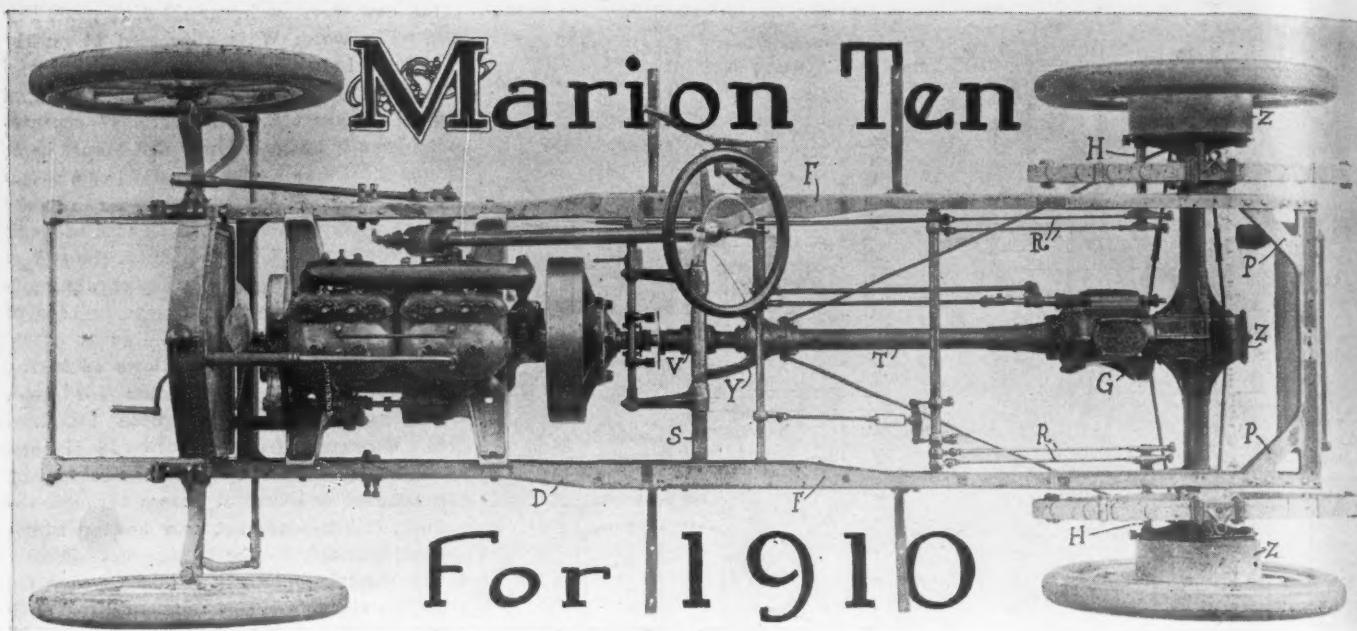


FIG. 1—MARION CHASSIS FOR 1910, SHOWING NEW INSIDE BRAKE CONNECTIONS

**F**OR next year the Marion Motor Car Co., of Indianapolis, Ind., has brought out but one type, designated model 10, which is furnished with either five-passenger, close-coupled or racy roadster types of bodies, all on the same wheelbase, which is 112 inches. The present policy of the company is to market 1,500 of these cars.

To those not familiar with the Marion car a hasty review of the chassis, Fig. 1, will serve to bring out its leading characteristics. The motor is a  $4\frac{1}{4}$  by  $4\frac{1}{2}$ -inch Continental; the rear axle is a unit with the gearbox G which is a patent of Harry Stutz, the designer; a torsion tube T incloses the propellershaft and has a swinging support at the forward end through a yoke Y from the tubular cross sleeve S of the frame. This allows of but one universal joint V in the complete system. For next year the frame has been greatly strengthened, first by increasing the vertical depth of the side members to 4 inches and increasing the channel flanges midway of the car at F to  $2\frac{1}{4}$  inches. For the first time the frame is inswept at D to shorten the turning radius of the car. The  $2\frac{1}{2}$ -inch drop in the side members in front of the rear axle is continued. Another example of added strength is the large gusset plates P which are an integral portion of the rear cross member of the frame. Strengthening the side as well as the cross members permits of carrying the motor directly on them, so subframe parts are not required.

This illustration shows another 1910 improvement, namely, the placing of the brake rods R completely inside of the frame members instead of having them mounted angularly to the outside of the frame at the brake drum. This has been made possible by carrying the operating rod and sleeve H from the brake drum inward, paralleling the axle to the inside of the frame. The result is that the brake-

operating parts are entirely obscured and they now operate in a direct line instead of pulling at an angle. As the brake drums D on the rear wheels show, both foot and pedal brakes are of the expanding type, being located side by side and operating in drums 14 inches in diameter. Each set of brake shoes is 2 inches wide.

#### Steering Gear Changes

An important change has been made in the steering arrangement, illustrated in Fig. 5, which consists in the drag bar B attaching to the steering arm A above the axle instead of beneath as heretofore. The importance of this is readily realized in that it raises this very vital part of the steering gear out of harm's way. A characteristic of this steering system which is continued is the yoke ending Y at the rear end of this bar, which has a universal connection with the radius rod R instead of the customary ball-and-socket union. The rod R at its lower end takes a vertical sleeve S which has formed integrally with it a horizontal sleeve S1

through which the bolt securing the yoke Y attaches. A compression grease cup is fitted. A still further improvement for next year appears in this illustration, and is the artillery swivel support of the new Mercedes type of radiator which has been adopted. The bracket B on the frame serves as a bearing for the trunnion T secured to the radiator frame, and permitting of a flexible support instead of a rigid one as heretofore. This form of radiator support has been in use in not a few of the foreign cars for several seasons. In this conjunction it might be noted that a forward extension O of the bracket B serves for the attachment of the car headlights and a vertical socket S is the attachment for the front fender, this giving the bracket B a threefold duty—of radiator, headlight and fender support.

#### Uses Continental Motor

The Continental motor used as the power plant requires no description here other than mention of the use of cylinders cast in pairs with valves on the right. The

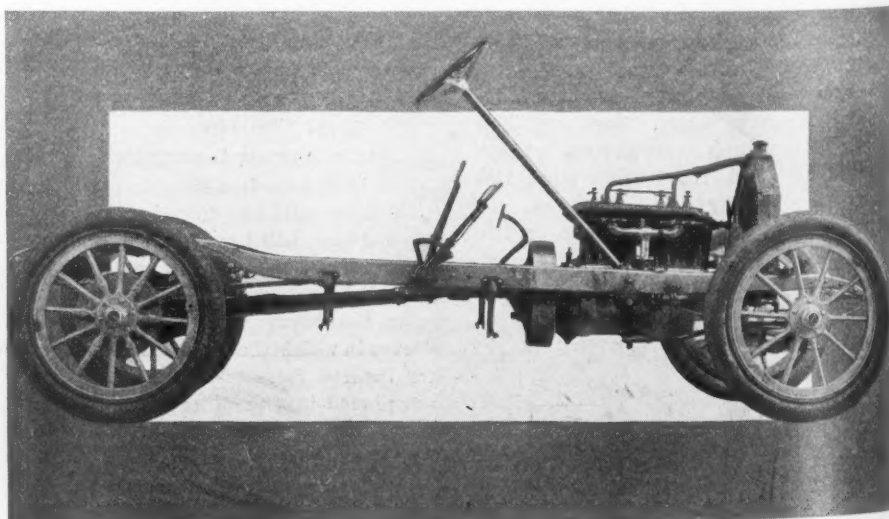


FIG. 2—MARION CHASSIS FOR 1910



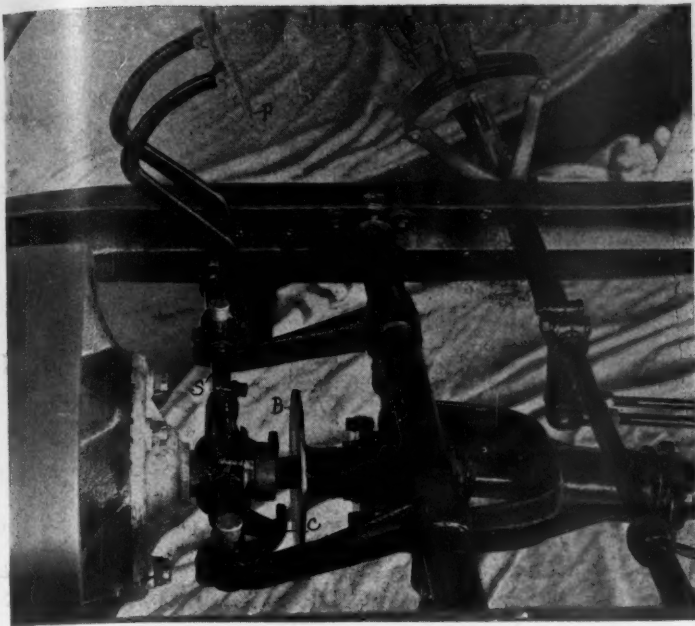


FIG. 3—CLUTCH BRAKE OF 1910 MARION

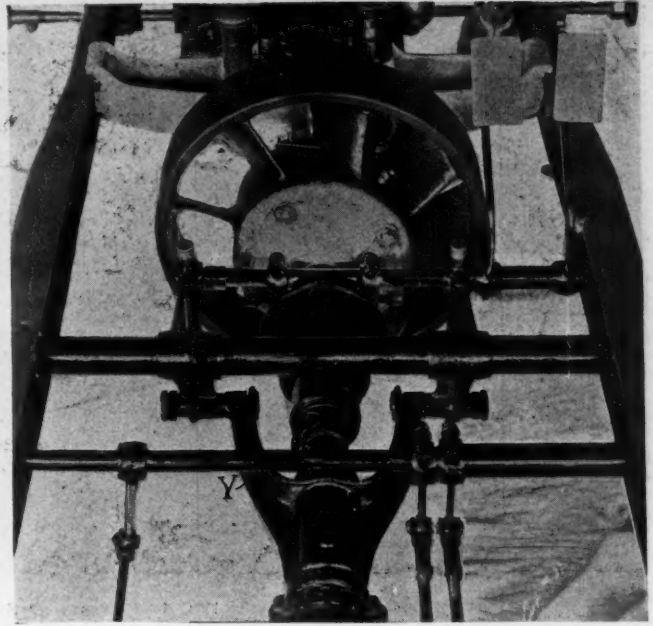


FIG. 4—FORWARD SUPPORT MARION TORSION TUBE

lubricating system is a circulation one with the oil reservoir in the base of the crankcase and the flow of oil maintained by an oil pump OP in front of the flywheel. This pump is on a vertical shaft to the top of which can be attached the timer if desired. In this motor the timing gears at the front end are regularly inclosed, and the fan is supported adjustably on the front cylinder casting with the pulley for driving it located in rear of the timing gear housing, so there is no necessity of piercing the front cover of this housing, the result being that this housing cover can be readily taken off should necessity demand. Besides the cooling circulation furnished by the fan, the flywheel spokes, as Fig. 4 shows, are of the propeller-blade type, thus affording an additional fan  $18\frac{1}{2}$  inches in diameter. A positive water circulation is maintained, the water pump and magneto being symmetrically mounted and driven by the same shaft on the left side of the motor.

A change has been made in the multiple-

disk clutch employed. This year this clutch has twenty-seven steel disks arranged in alternate sets, with the driving set attached to the flywheel, and the driven set connected with the propellershaft. For next year the number of disks has been increased to thirty-nine, a 50 per cent addition. As Fig. 3 illustrates, a clutch brake B attached to the propellershaft is furnished, which prevents the spinning of the propellershaft, thus facilitating the changing gears. This clutch brake operates as follows: The curved shoe C is attached to a shaft S for disengaging the clutch, so when the clutch pedal P is pushed forward to disengage the shoe C comes up against the plate B, thus retarding it, in this way slowing the master gear of the transmission. The Stutz selective gearset affords three forward speeds and has both shafts carried on F. & S. annular ball bearings. As Fig. 1 shows, the gearbox G is formed a unit with a ring part Z, which is the housing for the differential. To this ring portion end plates, into which

the axle sleeves are pinned, bolt thus forming a compact housing, the axle is supported by truss rods and Timken bearings are used in them as well as in the front road wheels. One important change over the present season is the use of 34 by 4-inch tires with Q. D. rims.

#### MOTOR CAR LITERATURE

A handsomely-printed and interestingly-written book is the 1910 catalog of the Waverley Co., Indianapolis, Ind., illustrating its various electric vehicles—the brougham, coupe, victoria-phaeton, roadster, stanhope, runabout and surrey. This most attractive catalog incorporates many a picturesque page of description together with the usual specifications of all its models. The cover pages are an embossed creation in gray and green with just a dash of gilt.

A work of art is the 1910 catalog of the Peerless Motor Car Co., Cleveland, O., which pictures and describes its many models, drawing attention to the changes in its 1910 cars over last year's types—although these changes are few. In the half-tone colored illustrations the same soft, delicate hues prevail as in previous catalogs. It is handsomely printed, and the two-toned double cover not only adds to the harmony of the book but makes it more serviceable as well. The book in its entirety is truly an edition de luxe.

"The Thomas Flyer" for September, published in the interest of Thomas Flyer owners and dealers, contains much interesting data on this car. A short factory-addition story is given, as also is a descriptive story on the 1910 Thomas Flyer.

An echo of the Fairmount park road race is a poster from the Chalmers-Detroit Motor Co., picturing the Chalmers-Detroit Forty in various stages of the race in which it won the consistency prize and finished second.

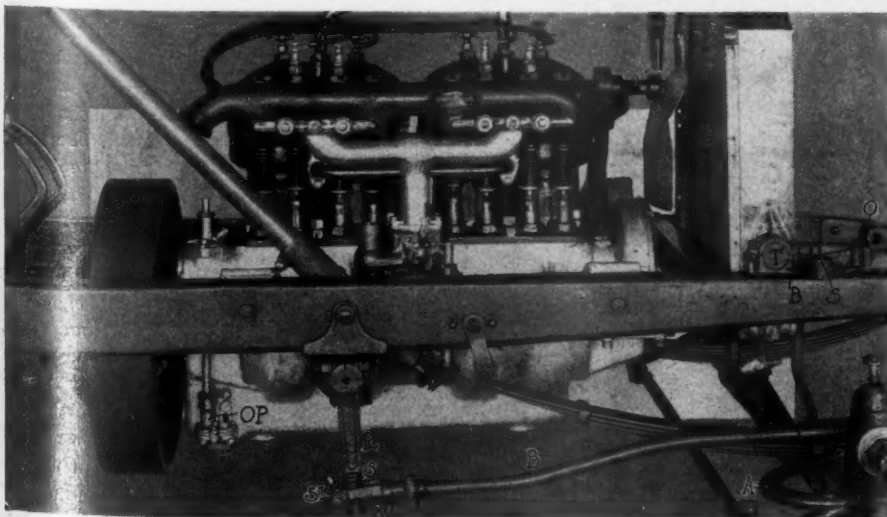


FIG. 5—MARION TRUNNION RADIATOR SUPPORT

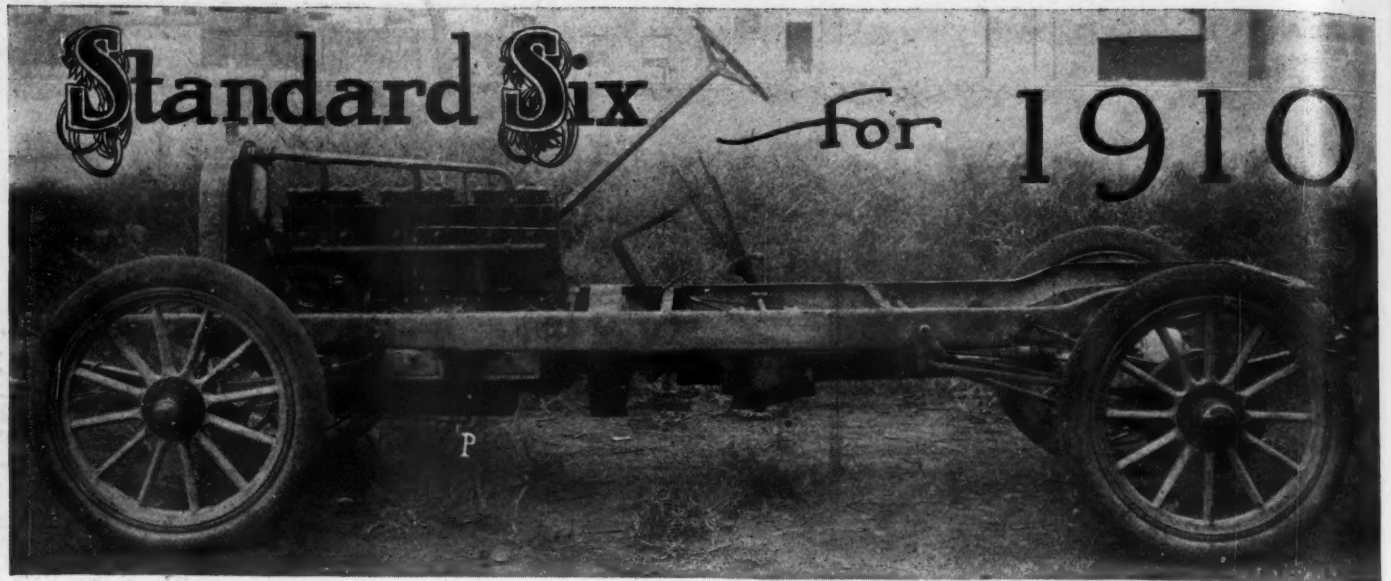


FIG. 1—CHASSIS OF SIX-CYLINDER STANDARD CAR—FOR NEXT YEAR

A NEW name has entered the car field for the season of 1910—the Standard six, built by the St. Louis Motor Co., St. Louis, Mo. As the name implies, it is a six-cylinder motor car, the cylinders of which are cast in pairs and have a bore and stroke of  $4\frac{1}{2}$  by 5 inches respectively, which give a formula rating of 48.6 horse power. The car is quite conventional in every respect and concurrent with the lines of the most approved design as generally adopted by the motor car industry. The motor is of the valve-in-the-head type, has a one-piece crankcase, three-point suspension, a Carter carbureter, Remy magneto and a centrifugal pump. Power is transmitted through an inverted cone clutch, a selective sliding-gear transmission, and a shaft with two universal joints to a full-floating rear-axle; the wheelbase is 124 inches, and 35 by 4-inch tires are used all around.

In Fig. 1 is shown a view of the left side

of the motor and from this an impression of some of its details may be readily obtained. The cylinders are of cast gray iron with large integral waterjackets which completely surround the valve-chambers, having a width of  $\frac{3}{4}$  inch around the exhaust valves. As may be seen in Fig. 2, large inspection plates are fitted to the jackets on the right side of the motor. The valves are all contained in cages which may be easily removed for inspection or grinding, and provisions are made to eliminate all possibility of the valves dropping into the cylinder through loss of or damage to the pin which secures the spring seat, to a breaking off of the valve stem or any of the other accidents which have been known to occur to valves of this type with direful results. The valves are all operated through adjustable pushrods and rocker-arms from a single camshaft enclosed within the crankcase of the motor; and the pushrod

mechanisms on their crankcase ends are held in place by a yoke for each pair and may be conveniently removed.

#### Pistons of Flat-Head Type

The pistons are of the flat-head type, with three eccentric compression rings, an oil groove near the bottom, and the piston pin anchored in the piston. The connecting rods are special steel drop forgings of I-beam section, with plain bronze bushings in the wrist-pin end and split nickel babbitt bearings at the crank-pin end. A one-piece drop-forged crankshaft of alloy steel, with the flywheel flange integral, is employed, which is heat-treated and ground and rests in four broad bearings of nickel babbitt. The camshaft is also a steel drop forging of one-piece construction with all cams formed integral therewith, eliminating the use of pins and keys. To insure strength and rigidity a one-piece cast iron crankcase is used, which is provided with three large hand-hole plates on each side to facilitate the inspection and adjustment of its internal mechanism. This case is divided into three compartments vertically, and into two portions horizontally, the vertical divisions serving to keep the oil from collecting in one end of the case when ascending or descending a grade, and the lower horizontal section forming a reservoir for the lubricating system. The motor is rigidly supported by a heavy steel cross-member in front which rests directly upon the side members of the frame. This member also supports the radiator. The rear support of the motor is through a very large circular bearing in a steel girder which is also of heavy construction.

#### Circulating System of Lubrication

Lubrication of the motor is by means of a circulating system in which the circulation is maintained by a gear pump located on the forward end of the cam shaft and attached to the cross-member which supports the front end of the motor. The oil which overflows from the crank-

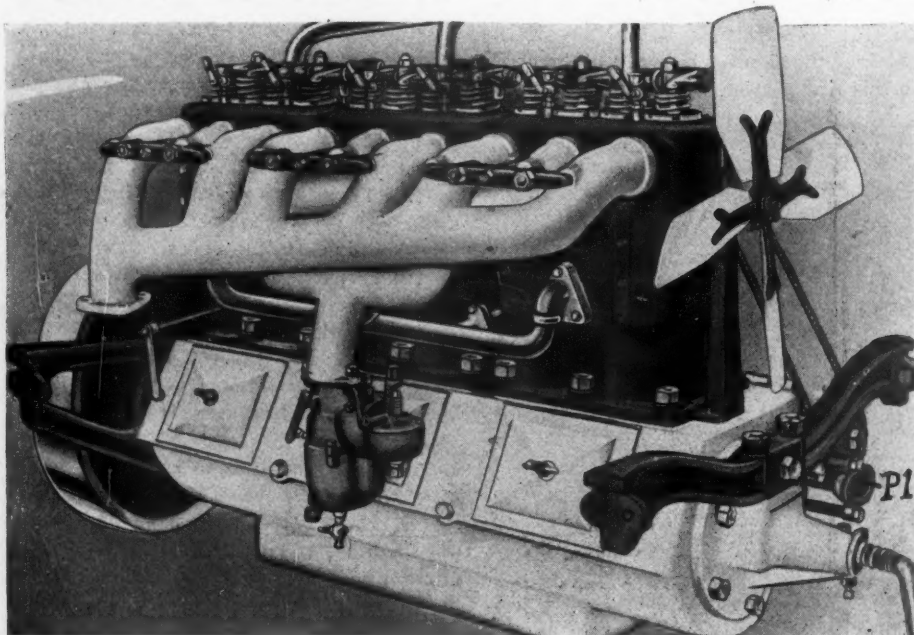


FIG. 2—STANDARD CAR USES ONE-PIECE CRANKCASE



case proper flows into the sump or lower-most portion of the crankcase; from here it is drawn through the copper pipe P Fig. 3 to the pump PI Fig. 2, from which it is forced through the oil lead P2 to a sight feed on the dash. The oil passing through the sight feed on the dash flows through the pipe P3 to a small reservoir R, from which it is distributed to the compartments of the crankcase through three copper leads, as shown. Splash lubrication, of course, is employed inside of the motor, and all outboard bearings are provided with compression grease cups.

A vertical tube radiator, a four-bladed belt driven fan and a centrifugal pump, are features of the cooling system. The fan is supported through an adjustable bracket on a vertical standard, which is bolted to the crankcase in front of the base of the forward cylinder, and driven from a pulley on the forward end of an external shaft which drives the water-pump and the magneto. The pump is bolted to the side of the crankcase, and the water which is drawn from the radiator enters at E Fig 1, and is then forced out through a pipe which passes between the first and second pairs of cylinders to the opposite side of the motor, where connection is made with a manifold which conducts the water to the lower portion of the water-jackets.

Ignition is furnished by a dual system of the jump spark type with current supplied by a Remy magneto and dry-cells. The distributor and breaker-box are both a part of the magneto and one set of plugs is used, located in a convenient position on the left side of the cylinders. The connections are all direct and the high-tension wires are enclosed in an insulating tube to protect them from contact with the heated or moving parts of the motor. A single non-vibrating induction coil is used in connection with the magneto and battery to generate the high-tension cur-

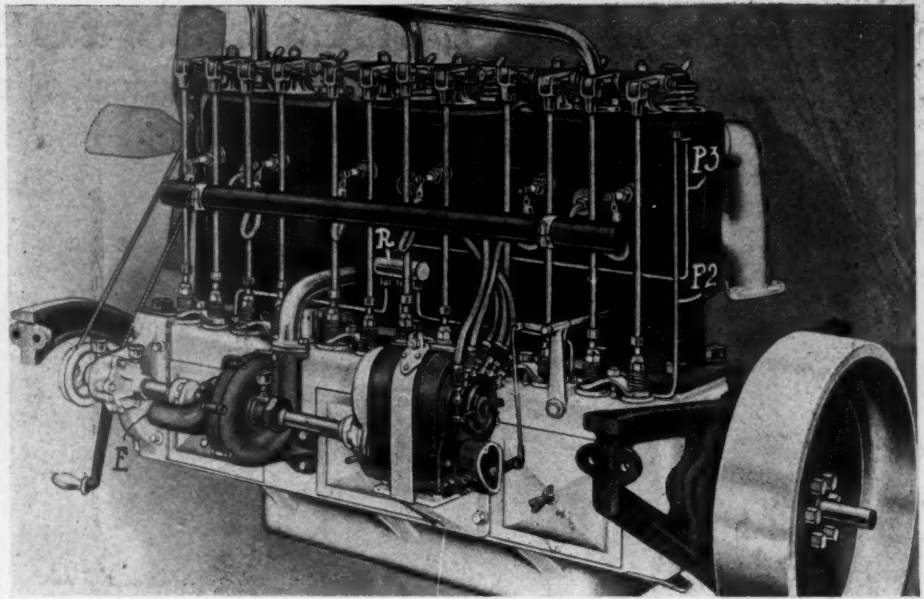


FIG. 3—LUBRICATING PIPES ON STANDARD CAR

rent necessary to produce the jump-spark; and a push button is provided for starting on compression.

The carbureter is of the venturi-tube, float-feed type, with an auxiliary air valve that can be controlled from the dash, and a hot-water jacket is provided to aid the vaporization of the mixture.

#### Clutch Inverted Cone Type

The clutch is of the inverted cone type, faced with leather, with cork inserts to insure easy engagement. It runs on a roller bearing, on a spindle formed by the end of the crankshaft, and a ball thrust bearing is used in the clutch collar. The transmission, which rests on a sub-frame, is of the sliding-gear selective type, giving three speeds forward and reverse. Hess-Bright ball bearings are employed throughout, and both the main and counter-shafts are in the same vertical plain.

All gears and shafts are of special steel,

heat treated, hardened and ground accurately to size. The frame is of chrome nickel steel, subjected to a careful heat treatment, and of channel section. It narrows in front to enable the car to turn in a very limited space, and it drops at the rear to obtain a low center of gravity and to allow sufficient spring action when traveling at high speeds over rough roads. Transmission from the gearcase to the rear axle is through a shaft with two universal joints, both of which are thoroughly encased in a grease tight housing of metal.

Two separate and distinct braking systems are employed, both acting upon the rear wheel drums, which are 2½ inches wide and 16 inches in diameter; and Raybestos brake-lining is used on both sets. The external brakes are contracting and operated through a pedal, and the internal expanding brakes are controlled by the emergency hand lever. Wheels are 36 inches in diameter, of the artillery type.

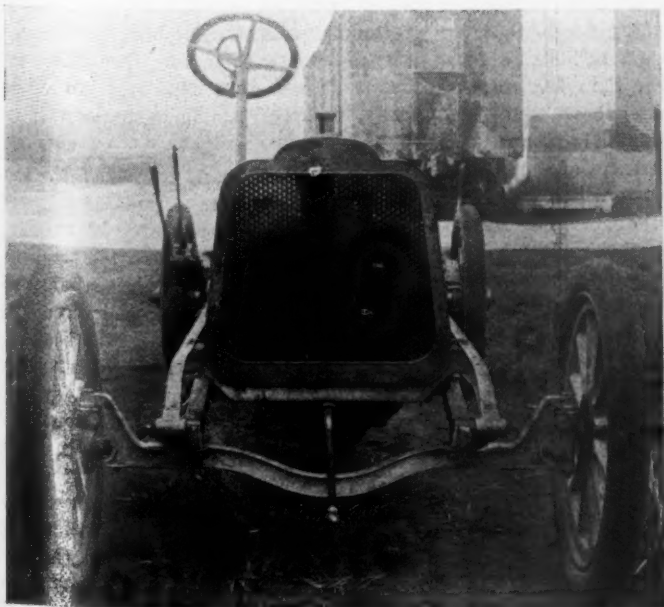


FIG. 4—FRONT VIEW OF STANDARD CHASSIS



FIG. 5—REAR SUSPENSION OF STANDARD CHASSIS

# STUDEBAKER ELECTRICS FOR NEXT SEASON

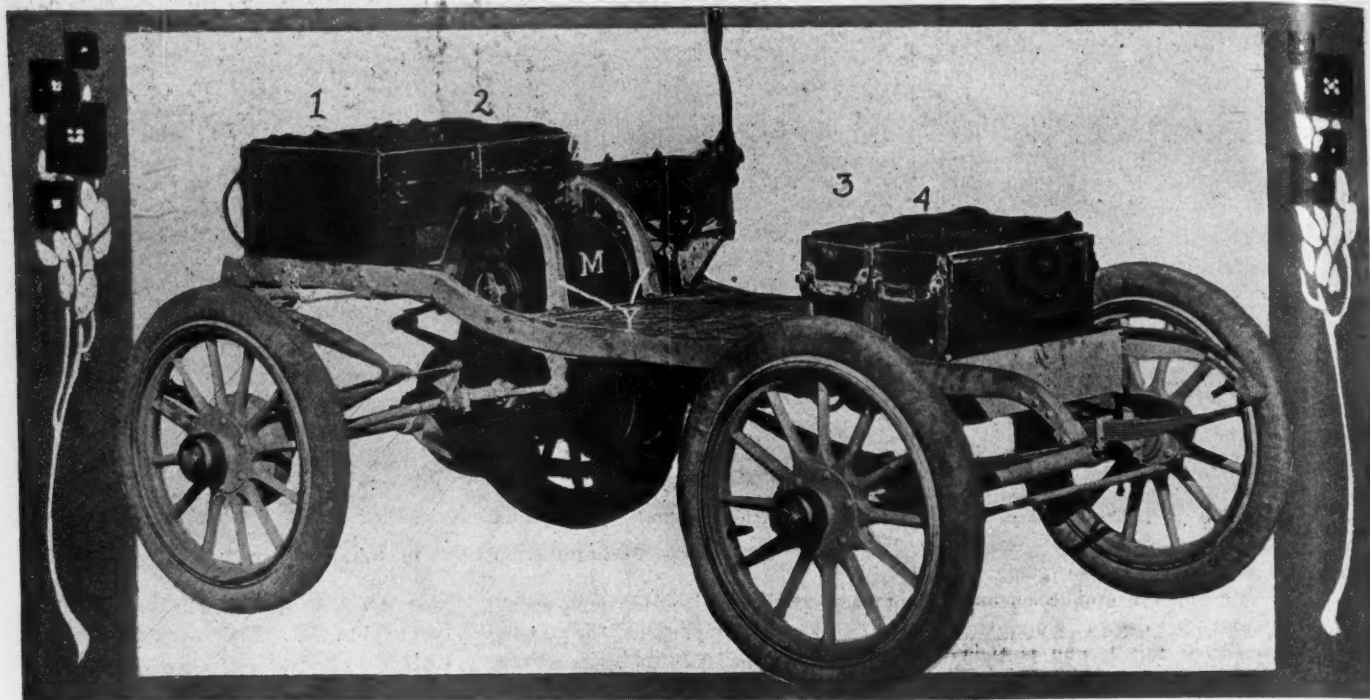


FIG. 1—CHASSIS OF STUDEBAKER MODEL 17-D WITH DIVIDED BATTERY

**B**EFORE describing the Studebaker electrics, it may not be out of place to cite a little history to show that carriage men are quite alive to the advances being made in transportation methods. The best evidence perhaps of Studebaker ability to keep in the lead of the times lies in the very fact that the blacksmith shop started by the five Studebaker brothers in 1852 was lost to significance when they built up a stupendous carriage business which has lasted from that day to this.

It was progress when the Studebakers embarked in the blacksmith effort, and it was progress when they went into the carriage business; this same progress has its monument in South Bend, taking on the shape of a plant which covers 101 acres of floor space, in which everything required in the line of horse-drawn vehicles may be had, for whatever purpose.

When the new transportation came into vogue, it found Studebaker brothers alive to possibilities, and President J. M. Studebaker, Sr., offers evidence of the most convincing character of Studebaker alertness. Mr. Studebaker is the only survivor of the original five brothers.

## Early Studebaker History

Some years ago, when it was apparent that electric vehicles would have a wide use, the company engaged Hayden Eames, then chief engineer of the Electric Vehicle Co., to undertake the task of designing and marketing these electric vehicles. By a systematic process and a proper display of skill, the plan has prospered, and it will come as a news item of more than a little purport to most people, that the Studebaker Automobile Co. will now go into the

building of electric vehicles on a large scale, and in view of the other efforts, in the shape of gasoline cars, now well under way, it has been decided to make a separate department of the electric vehicle work, and C. H. Tyler will hold sway over the destiny of this separated project.

Let it not be supposed that the present move is as a bolt from a clear sky; on the contrary, the amount of electric vehicle work already done by the Studebakers might be classed as large.

## One of the New Models

Fig. 3 is of one of the new models, representing a victoria-phaeton, and is designated model 17-D. The illustration shows the lines and work of the designer. Those who may have had experience with electric vehicles are aware of the differences that must be coped with when bodies are for this class of work rather than for use on gasoline cars. No matter how well the battery is constructed, it is prone to spread vapor over the surfaces of the body, and many are the failures which may be directly traced to lack of the necessary precaution in this direction. Knowledge of the corroding influence of gases that may be emitted when batteries are undergoing charge, stands in good stead when bodies are being made, and this is a strong point in Studebaker practice. Every particle of material used in the body work is absolutely selected with a view to long life, even though, with proper care, batteries may be so charged as to eliminate substantially all this class of trouble. The



idea is not to rely upon the men who charge the batteries, and it is better to assume that the work may not be well executed; in this way chance, and its near residence to failure, is done away with.

## Chassis of Model 17

Referring to Fig. 1 of the model 17 chassis, it will be observed that the battery is divided into four sections, 1, 2, 3 and 4, and two of these sections are placed forward and back, respectively, on the chassis. In this way the sections are so reduced in weight that they are not difficult for the workmen to handle when they have to be removed from the chassis, but it is equally true that the weight is properly distributed over the chassis and the riding qualities of the car are therefore superior. This weight distribution has other advantages, as for illustration, the chassis frame does not have to be so heavy, and the spring suspension is relieved of undue weight.

The four sections, 1, 2, 3, 4, of the battery are nested in trays made of seasoned oak, which has the property of resisting the action of electrolyte, and the trays are bound, by means of iron bands, that there is an entire absence of cell breakage, while, to protect the iron bands, they are given a substantial coating of an acid-proof compound. The wiring system, connecting the battery with the controller and the motor is well installed, using a superior grade of especially insulated copper wire for the purpose, having a care to select such sizes of the wire as will reduce losses to a minimum, even when the current flowing is that due to very slow speed work with soft going, on a grade, and of necessity, very high indeed.



The Exide battery is used. It is of necessity true that the size of the battery must be selected in view of the work to be done, but it is a matter of more than a little experience that dictates the right selection. If the battery is intended to give an unusual radius of travel, it must be at the expense of the life of the same, and it is the Studebaker policy to make a happy selection, rather with the expectation of affording an adequate radius of travel of the car, and to trade in favor of every possible increment of life of the battery.

#### Ball Bearings In Transmission

To conserve the battery, ball bearings are used at every point in the transmission system, and in the road wheels, but this in itself is not enough. Every car is machined in all its parts with the greatest care and in the assembling men of skill and a fine sense of discrimination are set to inspect every part, so if there is a noticeable addition of friction at any point, for the whole undertaking is gone over and the cause of the friction is eliminated or the parts are cast out.

The motor M, Fig. 1, is so designed that it affords the maximum twisting moment per watt of energy, and besides reducing the fixed losses to the minimum possible the I<sup>2</sup>R losses, so-called, are kept within bounds by the judicious use of the right amount of copper wire on the armature and field. The armature is properly laminated, using disks of soft Norway iron, of a special mixture, and the same, as well as being annealed, is subjected to an ageing process so that the hysteresis losses are not only low at the start, but they hold low for the life of the motor. Each disk of iron in the core of the armature is insulated from the other to eliminate eddy currents, and what is more to the point, the insulation is of a permanent character, capable of sustaining under all the heat and work to which it may be subjected.

The insulation on the wire of the armature is of the finest sea island cotton, wrapped with protecting braid at all



necessary points, and each layer is separated from the other by means of insulation of a permanent character. In the same way, the field windings are so protected that they are proof against heat, dampness, vibration, and retain the high insulation which is necessary if efficiency and long life are to be partners in the enterprise.

#### Construction of Commutator

The commutator is built up of specially processed segments of copper so that a uniform hardness is assured for all, and the mica used to insulate the segments from each other is of the finest selections from India, of a micrometered thickness, and the whole structure is assembled under great pressure, after which it is chucked and turned to a true diameter. All connections are soldered with a special hard solder, and in the process the joints are scraped to brightness to assure perfect metal-to-metal contact in an electric sense. It is the aim, wherever a joint is made, to have the resistance of the same far less than the normal section of the metal.

The location of the motor is at a point on the chassis just under the seat, and a pair of yoke-like suspenders Y pass over and around the motor, fastening to a pair of cross members, which in turn attach to the chassis frame. Shackles, which pass up from the motor frame on the center line, engage with members which pass down from the pair of yokes, and the motor so suspended is free to respond to adjustment as the occasion requires, it being the case that the transmission is made, primarily, by means of a Morse rocker chain, and finally through a regular sprocket chain shown in Fig. 2. This illustrates the chassis from the rear, and the sprocket chain passes into the housing of the live rear axle, and the Morse chain is enclosed in the boot B in front of the axle, passing up to the motor, noise is

eliminated by good mechanical work, but it is insured against by placing oiling devices at every point of vantage, and by the use of suitably contrived boots for the chains.

The rear axle is of the floating type, and the driving jaws are of large diameter, with liberal faces, and enough of them to assure long life. The material used in the gears, shafts, and other parts of great responsibility, are selected with a view to kinetic work, and by suitable heat treating, all parts are rendered fit.

The control system, including its links and levers, is of the straight line design, which is free from diagonal strains, and considering the use of selected grades of material, ease of manufacture and ability to determine as to the magnitude of the factor of safety, it conforms to its promise, and the measure of satisfaction is up to the most exacting requirement.

There are two classes of users who have to be protected against themselves, that is, the beginner and the operator of much experience who becomes absent-minded. In any event the design of Studebaker electric vehicles is such that either of these operators will find it impossible to do damage to the cars or hurt themselves. There is only one way that the cars can be started, and that is the right way. By an interlocking system, the five speeds ahead are available progressively, and even if the driver does throw the electrical switch to close the circuit when the speed lever is out of neutral nothing will happen. Before the speed lever becomes operative it is necessary to throw it into neutral, release the locking device, and close the switch, unless it has been closed at the wrong time.

In starting, suitable resistances are interposed, the idea being to gradually accelerate the car, and watching the ampere meter, which together with the volt meter occupies a place in easy range of vision, discloses how well the control is worked out, for there are no sudden and violent fluctuations of current, and the voltage remains practically constant at all times.

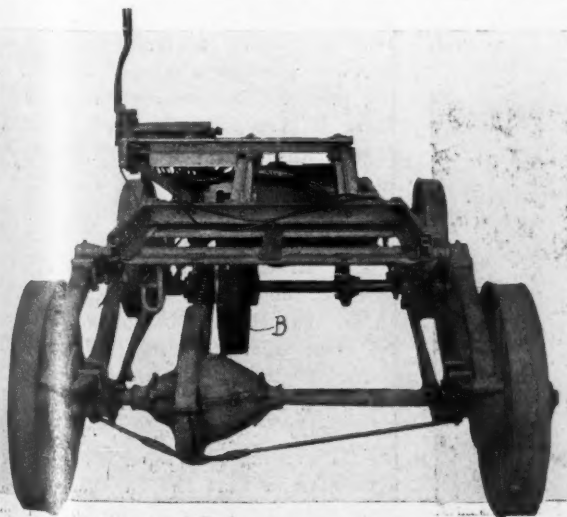


FIG. 2—REAR VIEW STUDEBAKER CHASSIS

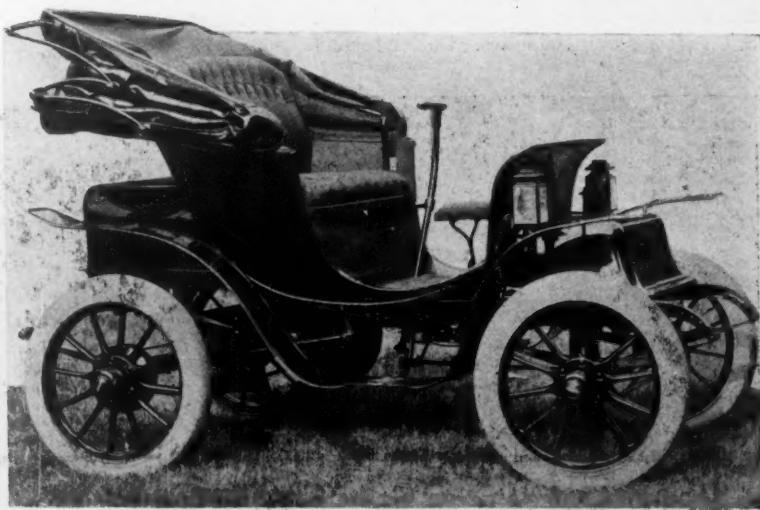


FIG. 3—STUDEBAKER VICTORIA-PHAETON ELECTRIC





collisions with street cars. The car is 20 horsepower and its weight, including the very heavy special ambulance body, is 4,550 pounds.

**Couldn't Stump Durphy**—When W. H. Durphy, sales manager of the Chase Motor Truck Co., of Syracuse, was in Council Bluffs recently he was offered a horse and wagon as part payment on a motor truck. The offer was accepted and at once Durphy had a sign stating the facts concerning the deal. He drove the rig through the streets and in 2 days had sold it for \$125, making a profit of \$25 on the transaction.

**Dog Traced by Motor Tag**—The Ohio state department is in receipt of several unusual requests which show the many uses to which the numbered tags on motor cars can be placed. Recently the registrar received a request for the name of the owner of a car. Accompanying the request was the statement that a valuable bulldog had been stolen recently which was noticed riding in a motor car carrying a certain number. By means of the name furnished by the department the dog was restored to its owner.

**Must Have Legible Tags**—The Ohio state motor car department has taken a stand which will put a stop to the practice of some drivers and owners of deliberately making their number plates illegible. It has become a practice for certain drivers to smear grease and dust on the tags in order that the numbers cannot be deciphered. They are thus safe from detection when violating the law. Instructions have been given the police departments of Ohio cities to compel drivers to keep their number plates clean and legible.

**Recognize State Law**—A number of cities in Wisconsin are adopting the state law regulating use and speed of motor cars as ordinances, in order that prosecutions may be made by cities as well as by the state. Heretofore many cities adopted arbitrary codes, but it was found that the state law supersedes all city ordinances. Then it developed that only the district attorney could bring prosecutions and the proceeds, if any, went into the state treasury. By making the city ordinance identical with the state law cities will be able to prosecute and get the benefit of the fines.

**Claims a Con Game**—James R. Harvey was convicted by a jury in the superior court in Boston last week for working a confidence game on James F. Cooper by which he got the latter's motor car and made a wreck of it. Harvey answered an advertisement and went with Cooper for a demonstration in the car and then agreed to take it for \$500. He gave Cooper a check and the latter refused to take it. So it was suggested that Cooper telephone the bank and see that the check was all right. While he was doing so Harvey skipped away in the car and the next Cooper knew of it he read of its being



MOTOR-DRIVEN WAGON TRAIN USED BY EASTERN SHOWMAN

smashed from a joy ride. So he had Harvey arrested with the above result. Sentence will be pronounced this week.

**Fight Against Dust**—Results of exhaustive tests of asphaltolene on Washington boulevard, Milwaukee, Wis., have just been announced by the board of public works. The boulevard, 1½ miles long, was sprinkled with the preparation at a cost of only 13-10 cents per square yard, and in 3 months time the dust nuisance has been reduced to a minimum. The Milwaukee park board recently established a small plant for the production of the material, and next spring all parkways and boulevards will be treated.

**Utah's New Speedway**—What will be one of the finest motor speedways in the west is already partially completed. The new road runs from Ogden to Salt Lake City, Utah, and 3½ miles has been finished. Each of the three counties through which the thoroughfare passes and which will be benefitted by it, will pay for its maintenance when completed. Concrete culverts are being put in all along the road in place of wooden culverts and bridges and the roadway is being leveled by scrapers and smoothed by steam rollers.

**Unique Motor Train**—The A. O. Lombard Co., of Waterville, N. Y., has in its shops made one of the most unique arrangements for a traveling circus that ever has been seen. It is a car for the use of the H. H. Linn dog show. A car 26 feet long and 6½ feet wide is set over a gear similar to that which propels the Lombard log hauler. By means of this car, which is fitted up as a comfortable traveling home, the carts containing the equipage of the show are taken from place to place. A Brennan engine of 50-horsepower propels the running gear, and the machine can travel over any kind of a road at the rate of 4 miles an hour. By means of a truck in front turned by a work gear the car can be steered, and it can also be run in the winter time by placing runners in front instead of the wheels. The car is divided into two parts, the living quarters

and the operating room. In the latter are repair kits, dynamos and all that is necessary for the mechanical end of it.

**Going to the Vanderbilt**—Twenty-five Chalmers-Detroit owners from Philadelphia will tour to the Vanderbilt cup race, leaving the local agency, the Chalmers-Fanning Motor Co., at 12 o'clock noon the previous Friday, returning to the Quaker City the following Sunday. Charles M. Strieby has been deputized as advance agent, and the Quakers will be well taken care of during their short outing. The Philadelphia agents of the Stevens-Duryea, A. G. Spalding & Brothers, have notified all their local patrons that they have secured a large number of well-located parking spaces which will be distributed gratis to such of them as attend the big race.

**After Road Obstructionists**—Mrs. Margaret Christianson, of Manitowoc, Wis., is the second person to claim damages under the new Wisconsin law relating to obstructions on the public highways. Mrs. Christianson asks \$1,000 personal injuries and \$1,505 damages to her touring car from the city of Manitowoc, alleging that a defective highway resulted in a serious accident. James T. Drought, of Milwaukee, secretary of the Wisconsin State A. A., recently filed claim against two highway districts in Winnebago county, setting a precedent.

**Prizes for Road Makers**—The Automobile Club of Pittsburg will distribute prizes amounting to \$300 among township road officials in Allegheny county according to the terms of its competition started last February. The prizes and also \$5 to each competitor, will be awarded at a dinner to be given by the club at the Colonial hotel Saturday. The competition is said to have improved several of the dirt roads fully 100 per cent. It has led to many of the supervisors using the King split log drag. Diagrams showing the exact construction of this drag and how to use it were scattered throughout the county by the club and more than a score of township supervisors entered the competition.



# The Motor Car Repair Shop



**A** MECHANICAL principle which is very often overlooked or forgotten in regular practice was very clearly demonstrated to the writer a short time ago. A racing motor cyclist was having trouble with his machine and in order to get at the trouble it was necessary to remove a little plate which was held in place by three flat head screws. Two of the screws, 1 and 2, in Fig. 1, had been removed with comparative ease, but No. 3 refused to budge. The mechanic working on the machine was a representative of a reputable factory and the way in which he used the screwdriver, hammer and monkey-wrench showed he had had considerable experience. Nevertheless, a number of vain efforts were made to remove the obstinate screw. It was then suggested that he replace the two screws which had been removed and tighten them down reasonably tight, then try to remove the obstinate screw. This appealed to the cycling mechanic and the suggestion was carried out, with the gratifying result that the no longer obstinate screw was loosened without any great effort at all. Each screw was then loosened about half a turn each and then removed entirely. The cause of the trouble in the first place is shown in the illustration. When the first two screws were removed the cover sprung up as shown by the crevice A, which is, of course, exaggerated to be more plain. This made the screw No. 3 bind to such an extent that its removal was impossible. This is a principle with which the repairman is often confronted in motor car work, and not only is the removal of a plate of this kind more easily accomplished if the strain is equally relieved all around the plate, but if this principle is ignored in tightening down a plate and first one screw or nut is drawn down tight, then another until all have been drawn, the chances are the plate will be cracked or a lug broken off, or the screws or nuts which were first tightened down will be found to have loosened up.

## FITTING A SPEEDOMETER GEAR

A large majority of speedometer troubles are caused by the improper attachment of instruments and fittings; and the most common error is the attachment of the large gear which is fitted to the road wheel. Either through ignorance or carelessness, this gear is often made fast to the wheel in a positions eccentric to its axis, with the result that when the component gear is in mesh and the car is running, a whirring or intermittent grating noise is made which is not only annoying, but signifies that unnecessary wear is taking place between the speedometer gears. Fig. 1 shows how a speedometer gear may be accurately fitted. Before re-

## Hints to the Amateur

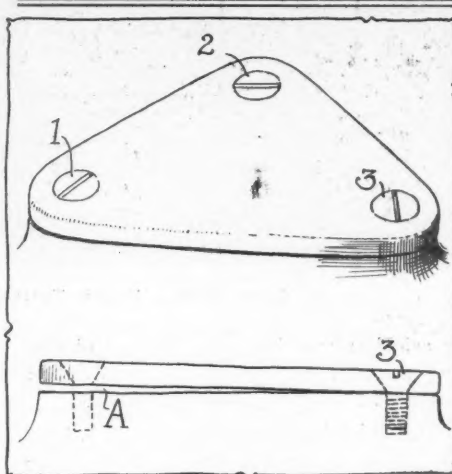


FIG. 1

moving the front wheel on which the speedometer gear is to be fitted, note the amount of clearance between the flange-nuts and the steering knuckle. Various styles of gears are supplied to properly fit the wheel; on most wheels the gear can be set over the nuts of the hub flange bolts, provided there is sufficient space for the gear to pass between the hub flange-nuts and the steering knuckle. For others, the gear is made with lugs, to fit around the nuts and lay flat against the hub flange, or holes are provided in the gear through which the nuts may pass as shown in the illustration. After having examined the amount of clearance and decided on the style of gear necessary, remove the wheel and prepare to attach the large gear, using the screws supplied for the purpose, which pass through the small holes in the gear, and through the metal bushings provided to set the gear away from the wheel, into the hub flange, or into the spokes, in wheels with small hub flanges. Some preparation is generally necessary before the gear can be attached; the bushings are rarely of the proper length and must there-

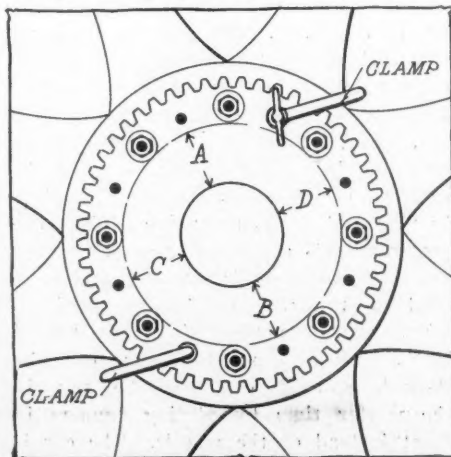


FIG. 2

fore be carefully cut off or filed down to the proper length. By saying carefully cut off or filed down it is meant that they must all be of equal length and the ends perfectly square; otherwise, when the screws are fastened down the gear will be bent out of true with the vertical plain. The gear should now be laid on the wheel with all bushings in place and as accurately centered as possible with the eye. It should then be moderately clamped down in this position with two furniture clamps as shown. Now, with a pair of calipers see if the distances A and B are equal, also if distances C and D are equal at the same time; if not, move the gear about until it is accurately centered by tapping it gently in the proper place with a hammer. When properly centered, fasten the clamps securely and bore, and tap if necessary, the holes which are not rendered inaccessible by the clamps; then apply the screws, remove the clamps and complete.

## GAS LAMP PRECAUTIONS

There was once a case in which, for the want of a key, a wrench was used to turn on the gas. The gas was gently turned on to the extent of what the operator judged to be about right; then removing the wrench from the end of valve on the tank, he went forward, struck a match and lit one of the lamps. A hot blue flame burst from the jet, the operator jumped back to the tank, lost many seconds in a vain endeavor to fit the wrench to the end of the valve, then in his excitement turned it the wrong way for a second, then shut off the gas. Returning to the lamp, it was found a hole had been burnt through the top. Had the operator had presence of mind enough to just reach under the lamp and extinguish the flame by pinching the hose, no damage would have been done; if the wrench had been left on the valve till the flame had been regulated, perhaps no damage would have been done; had he been in possession of a regular gas tank key but carried it on a chain attached to his clothing as is the custom of many, he might have had just as much trouble fitting it to the end of the valve as with the wrench; but, had a key been used and left in position till the light was regulated, the trouble might have been avoided. A safe method of lighting lights of this type is to turn on the gas very gently, then go forward and listen to see if a blowing noise can be heard at the jet, or if an odor of the gas is present. If there is an odor and no blowing it is safe to apply a light; if there is both a blowing and an odor, go back and turn the gas off till the blowing ceases before applying the light. A regular key always should be used in preference to a wrench.





# Manufacturers' Communications



## WILL TRADE-MARK PARTS

DALTON, MASS.—Editor Motor Age—We have noted with pleasure the recent editorial in Motor Age entitled "Substitution in Coil Parts." We believe in printing matter of this kind. Motor Age is doing the ignition trade a whole lot of good. We have been up against this trouble for the last year and a half and as Motor Age says, it causes no end of condemnation of the manufacturers of the coil for which they are not to blame. We are taking up the matter now of making a registered trade-mark so our different parts can be identified at a glance, and all of our coil parts will carry this particular mark. It is a very common occurrence to have vibrators, platinum screws, etc., come in on coils sent to our factory for repairs where we find the platinum is of a base metal, thus making the parts useless after a few hours' use.—Pittsfield Spark Coil Co.

## FINDS FEW SUBSTITUTIONS

North Chicago, Ill.—Editor Motor Age—While we have not experienced a great deal of trouble in people substituting springs and adjusting screws, still we have had few coils returned on which we found entirely different kinds of springs were substituted for the proper kind, with very disastrous trouble results. I know of a good many cases where springs carrying platinum contact and adjusting screws, and even the vibrators themselves were made and sold and represented as being the regular equipment of the coil. In most cases the springs were either too stiff or too thin, and the platinum of a very inferior quality. It is our policy to warn our customers from using any repair parts other than those furnished by ourselves.—Pfanstiehl Electrical Laboratory.

## IMITATORS ARE HARMFUL

New York—Editor Motor Age—We have noted the recent editorial in Motor Age on "Substitution in Coil Parts" and our experience has been that the imitations of our parts have done more harm to us than probably any other method that may have been adopted. Our vibrator parts, that is our platinum screws and adjusting springs, are stamped with our trade-mark in a diamond. The imitators have gone so far as to make an imitation of these parts and stamp them with a blank diamond—a diamond without any name in it, so that in addition to notifying our customers to beware of parts not stamped with our diamond trade-mark, we have been obliged to advise them to look for the name "Splitdorf Laboratory" in the diamond. As our goods are distributed all over the country it has been a very difficult matter to reach the individuals, but their experience of finding substitutions

for our parts is one that is being to our branches daily. Some of the spark coil parts most imitated are the ratchet screw and the bogert spring, that is the larger screw and the smaller spring. We have found these stamped with a blank diamond, just the same as in the genuine article, excepting that the name has been left off.—Splitdorf Laboratory.

## TROUBLES OF SPARK COILS

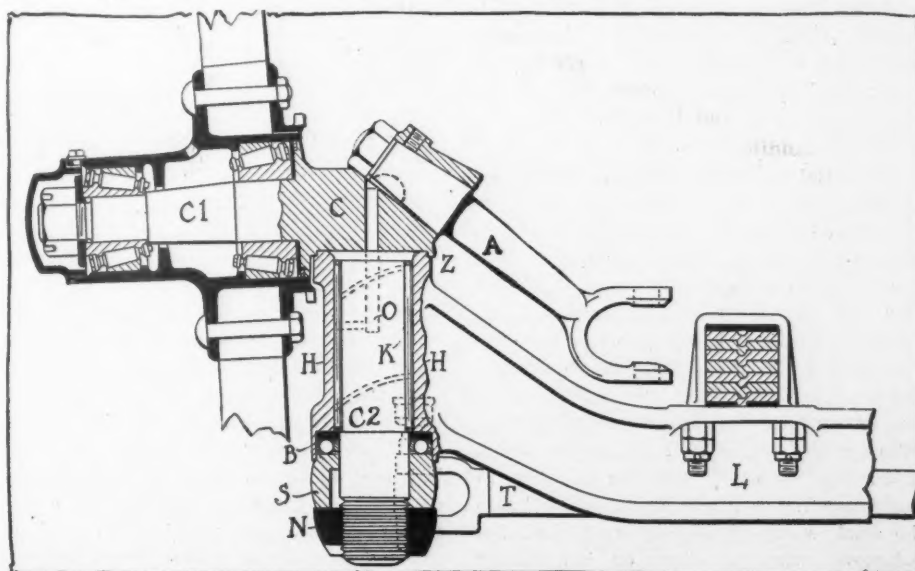
Worcester, Mass.—Editor Motor Age—With reference to the recent editorial in Motor Age on "Substitution in Coil Parts," the writer has not met with this particular difficulty as yet and thinks that the trouble experienced with coils today, in a great many cases, is due to the fact that a large number of coil makers have reduced the amount of insulation in their coils, the sizes of their windings and hence increased the liability of their short-circuiting and producing coils which use more current from necessity, and which, of course, results in rapid detrition of the platinum points. In most cases, the platinum points themselves have been reduced. This is due to the sharp competition which has existed in reference to prices for spark coils. We think a great deal of trouble with spark coils can be traced to this reason.—W. H. Leland & Co.

## ROYAL TOURIST STEERING PARTS

Cleveland, O.—Editor Motor Age—We wish to call attention to a slight inaccuracy in your description of the 1910 Royal Tourist car, which appeared in Motor Age September 30, pages 24 and 25. In Fig. —, page 24, a plain bushing K is shown in the end of the front axle L for the bearing of the vertical hub C2 on the steering knuckle. Instead of a plain bearing roller bearings K are used at this point.—Royal Tourist Car Co.

## WHY COLUMBIA STOPPED

Hartford, Conn.—Editor Motor Age—It has not been made very clear to the public in different reports of the Fairmount park races, Philadelphia, October 9, what put the Columbia car out of the running. After making one lap Coffey, having climbed from fourteenth to eighth place, was going up the City Line hill toward the turn at Belmont avenue, with the Perkins Chadwick ahead. The Chadwick turned at the sharp angle going on the Belmont avenue and raising considerable dust at this point. In going around this point, however, his car skidded, so much so that it partly faced about in the opposite direction and blocked off the road so that there was no room to get around him without striking the car or the tree or else running into the people. At this point Coffey, knowing that he would strike both, ran between the car and the tree, and cut a gash in the tree 1½-inch deep with his hub cap and also striking the Chadwick car. The damage to the Columbia was principally done by striking the tree, as this was an enormous shock. It did not, however, break anything except to throw the rear axle out of line and bend the frame. The car could still proceed under its own power, but was in no condition to finish the race, and Coffey decided to abandon it as soon as the grand stand was reached. In this accident the Columbia had the tires ripped off, and the two cars after this laid side by side along the road. It appears that the Chadwick car took the turn very fast, too fast to keep on the road, and it was placed in such a position that it was utterly impossible to get around the car at the speed Coffey was going at the time of the accident.—Columbia Motor Car Co.



SHOWING ROLLER BEARING IN ROYAL TOURIST STEERING PARTS



# Among the Makers and Dealers



**Is a Ford Agent**—The Standard Motor Car Co. has obtained the Portland, Ore., agency for the Ford car.

**Locates in Seattle**—The Couple-Gear Truck Co. has recently located at 1927 First avenue south, Seattle, Wash.

**Will Make Steering Gears**—The Dittweiler Mfg. Co., of Galion, O., has been organized with a capital stock of \$50,000 to manufacture steering gears. A large plant has been placed in operation.

**General Motors Co. Election**—The General Motors Co. held its annual meeting on October 21 at Jersey City, N. J., and elected H. G. Hamilton and J. T. Smith directors of the company to succeed F. L. Smith and Henry Russell. The officials of the company were re-elected.

**Gets Cadillac Territory**—The Copeland-Orr Motor Car Co. has been organized at Lincoln, Neb., by C. B. Copeland, formerly with the Iowa Automobile and Supply Co., of Des Moines, and G. M. Orr, formerly a Cadillac salesman. The company has secured the territory south of the Platte river in Nebraska for the Cadillac.

**Now Isham Motor Car Co.**—The Thayer-Isham Motor Car Co., of Marinette, Wis., has reorganized under the name Isham Motor Car Co., Mr. Thayer having disposed of his interest and gone west. The concern is the only garage in Marinette and has for the past year represented the Studebaker and Maxwell lines. The location of the new concern will be the same.

**Adds Motor Car Line**—The Peru Van Zandt Implement Co., of Wichita, Kan., has decided to add the motor car business to its other lines. The company will handle the Richmond car and has secured the agency not only for southern Kansas, but for the entire state of Oklahoma.

**Joins Omaha Colony**—The Sweet-Edwards Auto Co. is the latest addition to the ranks of Omaha dealers. The company has a capital stock of \$20,000 and the incorporators are Ernest Sweet, George W. Edwards and E. Baird.

**Addition to White House Garage**—A Baker electric express wagon of 1,000 pounds capacity is the latest addition to the White House garage, already notable for the fine collection of cars purchased for the use of President Taft and his family. Two Pierce-Arrow cars, a White steamer, a Baker electric victoria and a Baker express wagon comprise the fleet of motor cars in the White House garage. The express wagon will be put to varied uses, but its chief function will be to carry the White House mails. It will also be used to convey baggage to the station whenever the president or his family travel. The wagon is equipped with a

3½-horsepower motor, series wound, with 300 per cent overload capacity. A forty-two-cell Exide battery is used.

**Diehl Gets the Ford**—H. W. Diehl, of Bellingham, Wash., has been appointed Whatcom county representative for the Ford.

**Signs W. E. Moore**—The Rider-Lewis Motor Car Co., of Anderson, Ill., has secured the services of W. E. Moore as factory manager. Mr. Moore formerly was with Ford and other motor car plants.

**Sebrings Will Build Cars**—A six-cylinder touring car and a small runabout will be manufactured by Sebring Brothers, owners of the town of Sebring, O. Plans for the new plant are already well under way, and it is expected to have it in operation at the earliest possible moment.

**Moves to North Dakota**—J. J. Torrey has sold his garage at Huntley, Ill., and has moved to Cando, S. D., where he has consolidated with N. F. Case as Case & Torrey. They have the Maxwell and Hupmobile for Towner and Rolette counties and the Falcar for eight counties. Their garage is a cement block building 48 by 120.

**Kendall Company Moving**—The D. A. Kendall Motor Car Co., of Kansas City, agent for Pennsylvania, has leased the former quarters of the insolvent A. H. Kagy Automobile Co., 708 East Fifteenth street. The Pennsylvania offices, until possession of the salesroom is secured, will remain in the Commerce building with show quarters in the International garage.

**Larger Franklin Paint Shop**—In the construction of a sixth story for one of the larger buildings of the factory of the H. H. Franklin Mfg. Co. in Syracuse, N. Y., the floor space of the paint shop is doubled, the additional story adding 15,900 square feet. With this enlargement the number of enameling ovens has been increased from three to eleven, thus more than trebling the oven space. The new ovens are all of brick. The rubbing deck space has been doubled.

**Chauffeurs Are Interested**—The Professional Chauffeurs Club, of Worcester, Mass., is planning to give a series of entertainments during the winter at which prominent manufacturers will speak on motor cars in general. Several makers have taken an interest in the project, hoping, they said, the chauffeurs of other cities will form just such an organization. They have promised to send on men during the winter to give talks about the cars and their maintenance. Two tire manufacturers have promised to send on experts to address Worcester chauffeurs, and there will also be talks on transmis-

sions, differentials, various engine parts, the use of oils and the functions of many other working parts.

**Have Buick At Niles**—Edward Freneh and Dr. A. O. Ullery, of Niles, Mich., have formed a partnership in that city to handle the Buick.

**Enlarging Its Plant**—The Chenango Auto Top Co., of 30 Chenango street, Buffalo, N. Y., will enlarge its plant. The establishment is conducted by Robinson Brothers.

**Building At Muscatine**—The Jackson Motor Car Co., of Muscatine, Ia., has let a contract for a new garage which is to be 60 by 122 feet and one story high. There will be only one line of posts in the building and that will be 20 feet out from the wall and on one side.

**Mishawaka Has New One**—Mishawaka, Ind., will in a short time have a garage, according to an announcement of Cotton & Wolton, of the Mishawaka Livery and Garage Co. Changes are now being made in their building and they say that in 60 days they will have a fully equipped garage.

**New Continental Agents**—The Continental Caoutchouc Co., of New York city, announces some additional distributing agents as follows: The Gibson Automobile Co., 238 Massachusetts avenue, Indianapolis, Ind., which has been appointed distributing agent for a portion of the state of Indiana, also James S. Bailey Co., 18 Free street, Portland, Me., and the Auto Supply Co., of Baltimore, agent for the entire state of Maryland.

**Gets Big Reo Shipment**—The Wichita Automobile Co., of Wichita, Kan., last week received a shipment of seventeen carloads of Reos, valued at \$80,000, one of the largest shipments ever made to a single dealer. This shipment emphasizes the importance of Wichita as one of the biggest distributing centers of the southwest. Dealers say that indications now point to a sale of between 4,000 and 5,000 cars from Wichita in 1910.

**Homes Scarce in Pontiac**—The additions, improvements and enlargements made by the General Motors Co. to its plants in Pontiac, Mich., has caused a scarcity of homes similar to that which has existed at Flint since the company has enlarged its properties there. Within the coming 12 months, according to W. C. Durant, of the General Motors Co., the Rapid and Oakland plants will more than treble their payrolls. The business is already on the books and the men to be secured must have homes and boarding houses. At the present time empty houses are scarce and with the Motors company spending \$500,000 in en-



larging and improving the local plants more houses will be needed for the men who are to be brought here.

**Represents the Black Crow**—The Hub Auto and Renting Co., of Boston, which has just taken the agency for the Pullman cars in Boston, also has signed up to handle the Black Crow in New England.

**Rhinelanders On the Map**—The Morgan Garage Co. has been organized at Rhineland, Wis. A garage has been established at 22 South Stevens street. J. H. Morgan, owner, has purchased the electrical business of W. H. Gilligan, who will have charge of this department.

**Liverymen Converted**—Strain & McNutt, liverymen at Portage, Wis., have found it necessary to add motor car equipment to satisfy their trade, and if the car just placed in use proves as remunerative as expected, the horses and carriages will be sold and more cars purchased.

**Temple Changes to Baker**—The Ralph Temple Automobile Co., of Chicago, which has represented the Detroit electric for the past year, has relinquished that agency and taken on the Baker, the change being made, it is stated, because President Anderson, of the company making the Detroit, wishes to have for his representative in Chicago his prospective son-in-law.

**New Goodrich Building**—The B. F. Goodrich Co., of New York, has just finished, in New York city, an admirably equipped building for the handling of its rubber products, especially tires. The building is numbered 1780-1782 on Broadway, and has an ell of almost equal size at 225-227 West Fifty-seventh street. There are twelve floors and a basement. The latter is used entirely for the storage of motor car tires. The rear of the ground or street floor is a receiving and shipping room. The front is a large salesroom, done in mahogany. Green marble also is an element of the finish. On the second floor is the reception room. The finish here is fumed oak. A rear room is reserved for the solid tire storage and repairing. The eighth floor has been given over mostly to offices for the manager and salesmen. The rear is a storeroom for the stock of mechanical rubber goods. Above, on the ninth floor, are the general offices for the clerks. The next floor, for the company's use, is the eleventh—a large stockroom for specialties such as druggists', surgeons' and stationers' rubber sundries. On the top, or twelfth, floor are the most complete motor car tire repair facilities in the United States. There are special motor car elevators. One of these has the convenience of a turn-table floor. There also is a general freight lift. In addition, two passenger elevators are provided, and an electric dummy waiter, adjusted to stop automatically at any floor. The exterior of the building is white and green marble, with bronze capitols and decorations for the first two stories. Above this the material is pressed brick with white stone

trimmings. W. H. Yule is general manager, with H. C. Miller in charge of the motor car tire department.

**Tennant Takes On Marmon**—Tennant Motors, of Chicago, which has represented the Peerless for some years, has added the Marmon to its line, an order for seventy-five cars having been placed.

**Postmaster In the Trade**—D. A. Shaw, for 7 years postmaster at Mishawaka, Ind., has resigned from the office of postmaster in order to devote his time to his business affairs in connection with being treasurer of the Simplex Motor Car Co.

**Lear's 1910 Plans**—The Oscar Lear Automobile Co., of Springfield, O., announces it will manufacture three weights of motor trucks for 1910. The trucks will be of 1, 2 and 3 tons respectively. The principal change will be the increase in the bore giving 5 additional horsepower.

**Big Body Plant Planned**—Fred E. Schueler & Brother, Milwaukee, Wis., wagon and carriage manufacturer, which recently engaged extensively in the manufacture of motor car bodies, will build a \$30,000 plant on Milwaukee street, between Detroit and Huron streets, at once. The building will be three stories high, 40 by 120 feet in dimensions.

**Diamond Prosperity**—The filing of a certificate with the secretary of state of Ohio by the Diamond Rubber Co., of Akron, increasing the capital stock from \$5,000,000 to \$10,000,000 indicates the growth of the tire business in the past few years. At a meeting of the board of directors recently a cash dividend of 10 per cent was declared and a stock dividend of 100 per cent was declared, payable in the new issue of stock. Previous to the increase the stock of the company was selling for \$340 per share. This is the second large stock dividend, as in 1907 a

dividend of \$1,500,000 was made, which increased the capital from \$3,500,000 to \$5,000,000.

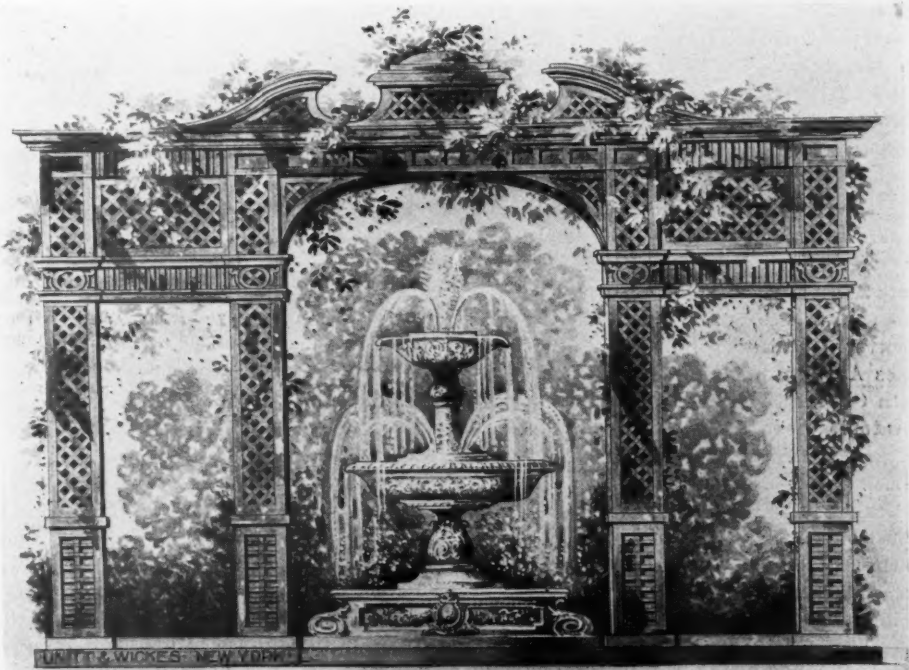
**Frost On Herreshoff Staff**—A. D. Frost, formerly sales manager for the Harry S. Houpt Co., has been appointed sales manager of the Herreshoff Motor Co., of Detroit.

**Kansas City Show In March**—A meeting of the Kansas City Motor Dealers' Association has been called for November 14, when the show committee will be appointed. Convention hall will be the place of the big exhibition and the first week in March the time.

**Handling Only the Mitchell**—The Central Auto Co., of Toledo, has been taken over by the Toledo-Mitchell company, comprising a number of Toledo business men, which will handle Mitchell cars exclusively. This concern was one of the oldest in the city, and the building will be remodeled to meet the requirements of the new company.

**Ove Goes to Texas**—Arthur Ove, of Racine, Wis., a salesman for the Kisselkar Co., general agent for the Kissel Motor Car Co., of Hartford, Wis., has been promoted to the position of manager of the Kisselkar company's branch at Dallas, Tex. Frank J. Edwards is general manager of the general agency, which has headquarters in Milwaukee.

**Hustling Texans**—The Imperial Motor Car Co., of Houston, Tex., has been incorporated for \$10,000. George W. Collier is president; Jonathan Lane, vice-president; J. H. Bright, manager, and J. D. Bright, sales manager. It has the agency for the Pullman and the Baker electric line, and has contracted for 200 cars for south Texas. The company intends to practice something which is a new venture in the south—to carry a complete line of samples of



DESIGN OF ELECTRICAL MARBLE FOUNTAIN FOR GRAND CENTRAL PALACE SHOW

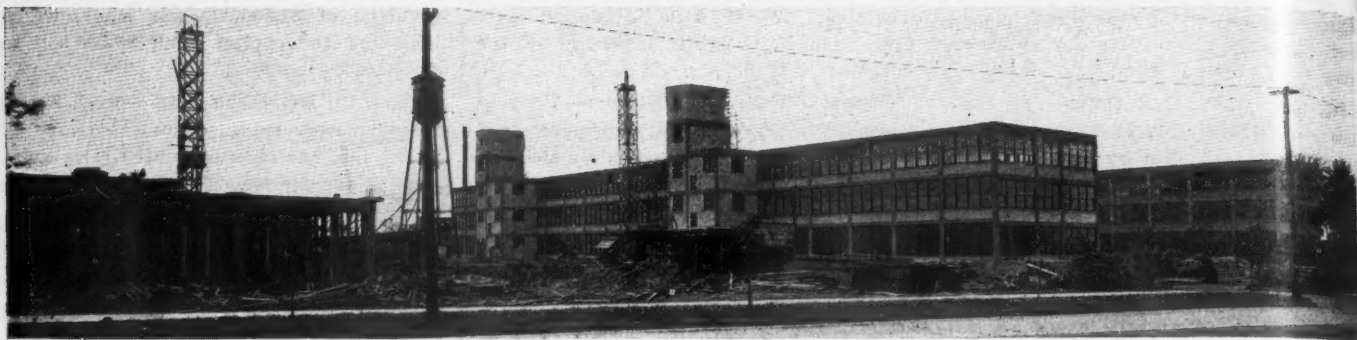


ILLUSTRATION SHOWING PRESENT CHALMERS-DETROIT PLANT AND ADDITION THAT IS BEING MADE

its entire line on its salesrooms floors at all times, eliminating the uncertainty of factory shipments.

**Office Building Nearly Ready**—The Mitchell Motor Car Co., of Racine, Wis., will occupy its large new office building on January 1. Work is being rushed, as present office facilities are entirely too small.

**Increases Its Production**—The Wisconsin Motor Mfg. Co., of Milwaukee, Wis., which opened a plant for the manufacture of motors at North Milwaukee has increased its production. The capital stock has been increased from \$35,000 to \$100,000 to carry the extensions of the business.

**Tries Overland Roadster**—A trial trip was last week made of the new Overland roadster. A. A. Atwood, Toledo agent, with several factory officials, made a cross-country run from Toledo to Detroit. The party left the Secor hotel at exactly 2 o'clock and at 5 o'clock reached the Hotel Ponchartrain, exactly 3 hours being consumed in making the trip.

**Quinby Has Isotta**—J. M. Quinby & Co., of Newark, N. J., body and carriage builders, have acquired a controlling interest in the Isotta company at 623 Broadway, New York city, the sole distributor of the Isotta cars. Fremont Rockett is the manager of the company in New York. The Isotta Import Co. will carry and keep in stock a complete line of the eight different models manufactured, including a full and complete stock of parts for the use and benefit of all Isotta owners who desire replacements or repairs.

**Handling the Pennsylvania**—New Pennsylvania agents throughout the country are as follows: Middleton Motor Car Co., San Francisco, Cal., San Francisco and northern California.; Vail Motor Car Co., Los Angeles, Cal., Los Angeles and southern California.; Lemly-Mills Auto Co., San Antonio, Tex., San Antonio and southern Texas; Pennsylvania Sales Agency, Atlanta, Ga., Atlanta and state of Georgia; Pennsylvania Selling Agency, Pittsburg, Pa.; Pennsylvania Selling Agency, Providence, R. I.; D. A. Kendall Motor Co., Kansas City, Mo.; H. Weston, Jacksonville, Fla.; Pensacola Buggy Works, Pensacola, Fla.; Murray O'Neill, New Bedford, Mass.; Haynes Auto Co., 219 South Sixth street, Minneapolis, Minn.; Oliver

Du Charme, Troy, N. Y.; Philip A. Lowe, Pittsfield, Mass.; C. W. Fulkerson, Carbon-dale, Pa.; Walter Slack, Trenton, N. J.

**New Croxton-Keeton Agents**—Agency contracts for the sale of Croxton-Keeton cars have been made with the Sanford Automobile Co., of Denver, and the Rooklidge-Gilmer Co., of Salt Lake City.

**Temporary Quarters For Badger**—The Badger Motor Car Co., of Columbus, Wis., has established temporary quarters in the Roberts & Schmidt garage at Columbus, until the new factory, now in course of construction, is ready for occupancy.

**Exhibit at Dairy Show**—Manufacturers of high-wheel cars, farm trucks and even high-priced touring cars took advantage of the attendance of farmers and dairymen at the national dairy show in Milwaukee, October 14 to 24, and conducted exhibits. The results were highly gratifying.

**Railroad Economy**—The installation of a gasoline motor car on the Marquette-Big Bay branch of the M. and S. F. railway in upper Michigan has proved so economical that three sections have been consolidated into one. The section foreman is able to cover more than three times as much ground as formerly. Additional gasoline section cars will be placed in service.

**Maxwell Will Be Host**—Following their custom to provide parking facilities for their customers at the most important racing events, the officials of the Maxwell-Briscoe Motor Co. have leased a tract of land opposite the grand stand for the free and exclusive use of owners of Maxwell cars who desire to view the coming Vanderbilt cup race. The ground furnishes ample room for over 500 cars and will no doubt be well patronized.

**New Palace Fountain**—One of the spectacular features of the Palace show in New York will be a huge electrical marble fountain stationed at the end of the main hall where last year's "Age Instructing Youth" was erected. The base of the fountain will measure 16 feet and the height will be 14 feet. Back of the fountain will be a mammoth plate glass mirror and surrounding the two will be a peristyle of green trellis work 40 by 25 feet in dimensions. At the base of the fountain and surrounding the peristyle will be

planted trees, shrubbery and potted plants. The fountain will be operated by a rotary pump.

**Locates In Youngstown**—A. F. Clouse has opened a garage in the rear of 110 Rayen street, Youngstown, O. He also will handle a line of Brock electric motor cars.

**Enlarging Its Garage**—The Koss garage, Downer avenue and Bellevue place, Milwaukee, owned by H. T. and R. M. Koss, is being enlarged by an addition 30 by 80 feet, to cost \$10,000.

**Badger Plant Almost Ready**—The Badger Motor Car Co., of Columbus, Wis., will occupy a part of its new factory building this week. The power plant is practically completed and the heating system is now being installed.

**Buys Out Bennett**—W. H. Heinzerling, formerly manager of the Fred A. Bennett Seattle branch, has bought out the latter's entire local interest in Seattle and will hereafter be located at 1420 Broadway, and will this season handle the Renault, Reo, Great Smith and Rapid.

**Starts In Salt Lake**—The Utah Motor Car Co., of Salt Lake City, has filed articles of incorporation. The officers are: D. C. Jackling, president; Charles W. Whitley, vice-president; John M. Hayes, secretary and treasurer; Joseph W. Bidwell and Wayne P. Joy, directors.

**Will Make 100 Electrics**—The recently incorporated Ohio Electric Car Co., Toledo, has formally organized by the election of the following officers: President A. M. Chesbrough; vice-president, R. R. Lee; treasurer, James Brown Bell; general manager and assistant treasurer, H. P. Dodge; secretary, Frank D. Suydam, Jr. All of the \$75,000 capital stock has been subscribed, and work has been started on 100 electric carriages.

**Sioux City Will Have Show**—The Sioux City Automobile Club, of Sioux City, Ia., has launched preparations for a show next year. It is probable that the show will be held the later part of February under the direct auspices of the club. If possible it will be given in the Auditorium. The seven agents in Sioux City, dealers from surrounding towns and the manufacturers and jobbers will have exhibits at the show which will continue for 6 days. Dr. F. A. Seemann, president of



the club, has been made chairman of the committee to complete arrangements and decide the date.

**Warner Starts Another Branch**—The Warner Instrument Co. has opened a Kansas City branch in the Missouri building. A. E. Gorton is in charge.

**Whitney Joins Fisk**—Clay Whitney has taken a position as traveler for the Buffalo Fisk branch and will cover western New York and a part of Pennsylvania. Mr. Whitney formerly was with the Iroquois Rubber Co.

**Starts at Houghton, Mich.**—The Northern Garage and Supply Co. has been incorporated at Houghton, Mich., by Ernest Hudson, John Funkey and N. P. Mowatt. The company has leased the Ruelle & Dube warehouses and will do a general repair business in addition to agency and garage.

**Studebaker Reunion**—A reunion of Studebaker agents located within 300 miles of Portland, Ore., was recently held at the Hotel Portland. Hayden Eames, general manager of the company at South Bend, and LeRoy Pelletier, general manager of publicity for the Studebakers, were among the guests.

**Orders a Fire Wagon**—The Brockton, Mass., fire department officials have been impressed with the adaptability of motor cars to the fire service and so it has secured a special motor combination wagon. The chassis is the regular 40-horsepower Pope-Hartford 1910 model, and with the wagon fully equipped and carrying its firemen it will travel 35 miles an hour.

**Changes Its Name**—The Nebraska Automobile and Storage Co., of Lincoln, Neb., has changed hands and now is known as the Nebraska Automobile Co. The same cars are being handled as before, namely, the Chalmers-Detroit, Hudson and Fritchle electric. The new firm is owned and managed by F. W. Joers and Vogel Gettier. Headquarters will remain the same—1226 N street.

**Peck Has Cadillac**—In the future the Cadillac will be represented in Indianapolis by the Peck Motor Car Co., that being the name of a reorganization of the Cadillac Automobile Co. of Indiana. The company has arranged to move from 25 East Ohio street to 322-324 North Delaware street as soon as the latter building is completed. The company will handle only the Cadillac and accessories.

**Erecting Concrete Plant**—The Breeze Carburetor Co., of Newark, N. J., is erecting a reinforced concrete factory which will be devoted to the manufacture and sale of Breeze carburetors, strainers, check valves, etc. The plant is located on fourteen lots comprising 35,000 square feet on South street. The machine shop alone will comprise 10,000 square feet. The new place will be one-story in height, with light on all four sides and seven skylights in the roof. It is expected it will be

ready for occupancy early in January. This move will give the Breeze people ten times its present floor space.

**Miller Has Atlanta Branch**—The Atlanta branch house of Charles E. Miller will be located at 66 Edgewood avenue, and will be open November 1. A complete stock of parts for cars for southern states will be carried on hand.

**New Denver Concern**—The Johnston-Fletcher Motor Sales Co., of Denver, which was organized last month, has secured agencies for the Premier, Falcar, American, Marmon and Crawford for the coming year. W. M. Johnston, the senior member of the firm, had the agencies for the Marmon, Crawford and American last year. Harry A. Labardee has been installed as manager of the company.

**Starts in Kansas City**—A concern known as the Inter-State Automobile Co. is in the process of organization at Kansas City. J. C. Conover, of the Richards & Conover Hardware Co., and Pearl Covert are to be the principal members of the company. The agencies for the Inter-State and the Autocar truck have been secured, with a probability that the Parry line will be included in the firm's offerings.

**Centering Toledo's Row**—An attempt is being made to center the motor car agencies in the new building now being erected at Madison avenue and Tenth street, Toledo, for J. Kent Hamilton. A 5-year lease has been signed on the two corner rooms with William H. McIntyre, of the Central Automobile Co., who will open an agency for the Maxwell. A 5-year lease has also been signed for the two rooms next to the alley with E. F. Leonhardt, of Bellevue, O., who will handle the Ram-

bler. It is said that the two rooms in the middle of the building also have been leased for a similar purpose.

**Kansas City Firm Locates**—The Monarch Motor Car Co., handling the Cole and the Demot in Kansas City, has opened a show room at 1625 Grand avenue.

**Has Olds and Oakland**—The Central Ohio Motor Car Co., of Columbus, O., which has been conducting a general garage business at 61 East Spring street, has taken the central Ohio agency for the Oldsmobile and the Oakland.

**Gramm Increases Stock**—The Gramm-Logan Motor Co., of Bowling Green, O., this week tripled its capital stock. The company originally had an authorized capital of \$100,000 which was increased to \$300,000. Growing business made this action necessary.

**Places a Big Order**—One of the biggest motor deals in Nebraska was consummated when William Bogenhagen, of Bloomfield, Neb., contracted with the Studebaker company for the delivery of twenty carloads of machines. Mr. Bogenhagen has secured the sole agency for Knox, Cedar and Pierce counties. He will conduct the business in Bloomfield and appoint agents in the other two counties.

**Kansas City Changes**—The Kansas City Rapid Motor and Transportation Co., incorporated for \$50,000, opened up a new garage last week at 1420-1422 Woodlawn avenue, Kansas City, Mo. The new company will handle the Rapid truck, the American and the Westcott. The second two-cycle motor to invade the Kansas City field is the Elmore. The agency is in the hands of the Eagle garage, 704 and 706 Prospect avenue, of which G. A. Kuhn is



NEW PLANT OF FRITCHLE AUTOMOBILE AND BATTERY CO. IN DENVER

manager. The Zartman-Tuller Motor Car Co., representing the air-cooled Cameron, is now at 909 East Fifteenth street.

**Changes Its Stock**—The Republic Motor Car Co., of Hamilton, O., has filed a certificate with the secretary of state of Ohio changing its issue of \$250,000 of preferred stock to common stock, making \$500,000 of common stock.

**Lucky Railroad Employees**—The Chicago, Milwaukee and St. Paul Railway Co. is equipping its Superior division in Wisconsin with gasoline motor cars for the use of section foremen. In many cases sections are being consolidated, this being made possible by the saving in time.

**Majestic Six Out**—The Milwaukee Auto and Engine Supply Co., 706-708 Winnebago street, Milwaukee, has produced a six-cylinder type of car, the Majestic. The company intends to enter into the manufacture of the Majestic on a large scale as soon as it can obtain larger quarters, for which it is now negotiating.

**Carl Fisher Married**—Carl G. Fisher, an Indianapolis tradesman, was married to Miss Jane Watts of that city on October 23, the ceremony taking place at the home of the bride's parents. The couple left immediately for a trip through California and Mexico. Mr. Fisher is president of the Indianapolis Motor Speedway Co., treasurer of the Fisher Automobile Co., president of the Prest-O-Lite Co., and is prominently identified with the Empire Motor Car Co.

**Chalmers' Latest Addition**—The Chalmers-Detroit Motor Co. is increasing its factory size as fast as it is possible to do so. An illustration on page 44 shows some of the additions now under way. To the extreme right is shown the old factory building, while in the center is the recently completed addition. To the far left is the first floor of a contemplated four-story duplicate of the other two main buildings. Additional floors are now being added to the original building as well as the completed new building.

**Overland's Toledo Plant Busy**—The first of the 12,000 cars to be turned out during the year at the Overland Mfg. Co. plant in Toledo returned this week from a 7,000-mile night-and-day non-stop run over rough country roads, across sand hills and streams in Ohio, Michigan and Indiana. The company is now arranging for large exhibits of cars and machinery to be displayed at the Atlanta, New York and Chicago shows. A feature of the Toledo plant is a repair department for Pope-Toledo cars which are not now being manufactured. The company has a 10-year supply of the various parts of the different models, including the first put out by the Pope company. A force of 900 men is now engaged at the plant and President Willys announces that 2,000 men will be at work by January 1, when the new buildings now under way will be completed. The contractor is rush-

ing the new structure destined to double the capacity of the plant.

**New Fiat Agency**—The Ettwein Motor Car Co. has taken the agency of the Fiat.

**Poppenberg E-M-F Agent**—Albert Poppenberg, of 647 Main street, Buffalo, N. Y., has the agency for the Studebaker E-M-F.

**Polson Has the American**—The American roadster is being handled in Portland, Ore., by the Polson Implement Co. This branch of the business is being handled by Alfred G. Ayerst.

**Has More Territory**—L. B. Butler, who has the agency for Massachusetts for the Rapid truck, has enlarged his territory and now has secured Rhode Island also. He will open a branch office at Providence and spend some time between that place and Boston.

**Rival for the Trolley**—Competition against the Puget Sound Electric Co. between Foster and Riverton to Seattle has been secured by the residents of White River Valley, Wash., who have established a motor service to that city. Six cars of the Seeing-Seattle type, each seating thirty-four passengers, will be put on an hourly schedule, timed to make the round trip in less than an hour and a half.

**Interested in Tire Business**—S. Z. Silversparre, formerly president of the Empire Ad Sign Co., of Denver, has purchased a one-half interest in the Boss Rubber Co., at 1614 Broadway, and assumed the office of secretary-treasurer, with J. G. Boss as president. The company will enlarge its plant and will take an agency for one tire exclusively, negotiations now pending for the states of Colorado, Wyoming and New Mexico.

**New Row in Indianapolis**—A new motor row will be established in Indianapolis with the completion of the Conduitt building in North Delaware street. The building is being designed especially for motor car salesrooms and so far the following concerns have leased rooms: Conduitt Automobile Co., agent for the Knox; Finch & Freeman, now at 35 South Capitol avenue, agent for the Rider-Lewis, Auburn and Richmond; Peck Motor Car Co., now at 25 East Ohio street, agent for the Cadillac and the State Automobile Co., now at 415 Massachusetts avenue, having the state agency for the Oakland.

**Fritchle Well Located**—The Fritchle Automobile and Battery Co., of Denver, is preparing to double its output of electric cars in 1910. During the past year 103 of the Fritchle electrics were manufactured, and the 1910 output will be 200. The company moved into new quarters this fall, now occupying what was formerly the Mammoth skating rink. This is the building which has been used for motor shows with the exception of last year, when the Denver Motor Club secured the Auditorium. In case the Auditorium cannot be secured this year prior to March 21,

the motor club may open negotiations with Fritchle for the use of his building for a week in February.

**Pfanstiehl Increases Stock**—The Pfanstiehl Electric Laboratory, of North Chicago, Ill., has increased its capital stock to \$50,000 and enlarged its plant and equipment.

**Invades Standard Oil Territory**—The Wadhams Oil Co., of Milwaukee, Wis., has invaded the territory of the Standard Oil Co. and established an agency and tank system at Two Rivers, Wis. It is planned to establish tanks in other cities of Wisconsin which enjoy a big transient motor traffic.

**Leases Hibbard Garage**—The Jonas Automobile Co., 726-728 National avenue, Milwaukee, Wis., agent for the Peerless and Cadillac, has leased the W. L. Hibbard Motor Car Co. garage at 417-421 Wells street, and will open its main garage there. The Hibbard garage was completed only a few months ago and is one of the finest in the northwest. The National avenue garage will be maintained as a branch.

**Building New Maxwell Store**—The new home of the Maxwell, which is now well under way at the corner of Tenth street and Madison avenue, Toledo, and which will be strictly a display and salesroom, will be ready for occupancy early in November. W. H. McIntyre will continue to handle the car, the business to be conducted at the new location under the firm name of the Maxwell-Briscoe-Toledo Co.

**Utah Dealers Organize**—The Utah Retail Automobile Dealers' Association was formed last week in Salt Lake City. Most of the concerns of the city were represented and it was decided to organize permanently to prepare for a show next February. Officers of the association were elected as follows: Fred Raymond, president; Frank Botterill, vice-president; Roger W. Power, secretary and treasurer.

**Columbus Show Dates**—The Columbus Automobile Club has decided to hold its show in the Auditorium at Columbus, O., for 8 days, exclusive of Sundays, beginning December 25. A committee consisting of Perin B. Monypeny, Fred H. Caley, Herman Hoster, N. O. Aeby and D. Kelly has been selected to arrange the details. The Columbus Auditorium has 500 square feet more space than the hall used at Cincinnati.

**Quaker Show Plans**—It is highly probable that the Philadelphia Automobile Trade Association, in the absence of a building of sufficient size to house its next winter's show, will be compelled to extend the exhibition over 2 weeks, devoting one to large cars, the other to smaller machines. Even thus early the demand for space has become so insistent that some such solution of the problem will be necessary. It will be almost impossible and an injustice to crowd all the exhibitors into the inadequate space afforded by the Sec-



and Regiment armory. Should this scheme be finally decided upon the show would cover the 2 weeks from January 17 to 29.

**Selling the Empire**—The Motor Supply Co., 615 North Broad street, has taken the Philadelphia agency for the Empire, a car which is a newcomer to the Quaker City. V. McC. Fulton is manager of the new agency.

**Change in Olds Agency**—The Oldsmobile agency in Baltimore has been placed with F. S. Bliven, who will conduct the Old Line Motor Co., 1016 Morton street. The Oldsmobile agency was previously held by E. L. Leinbach.

**Baltimore Is Popular**—Baltimore stands a good chance of becoming the home of another large motor car manufacturing company. Inquiries have been made by Secretary Boggs, of the Merchants and Manufacturers' Association.

**Waiting for New Store**—The demolition of its old building at Broad and Calowhill streets, to make way for a new structure, has necessitated the removal of the Philadelphia agency of the Selden car, the Selden Car Co. of Pennsylvania, to temporary quarters at 514-516 North Broad street.

**New Models Are Ready**—The Pierce Motor Co., of Racine, Wis., which was reorganized some time ago and the capital stock increased to \$300,000, has turned out its first 1910 models of the Pierce, twelve in number, and general agencies are being accommodated. All are of the six-cylinder type.

**Shows Consideration**—Milwaukee's tax commissioner is contemplating an all-year valuation of garages by his assessors. Assessments are made in the spring, at a time when garages are well-stocked with demonstrators, and the commissioner believes it is unfair to motor car agents to pay taxes on stocks that they retain only a short time and hold just at a time when the assessor is at work.

**Pope Company Election**—At a meeting of the board of directors of the Pope Mfg. Co., held in New York, the old officers were reelected as follows: Chairman, Harry Bronner; president, Albert L. Pope; vice-president, Charles E. Walker; treasurer, Colonel George Pope; assistant treasurer, E. M. Cutting; secretary, Wilbur C. Walker; assistant secretary, H. A. Lienhard; comptroller, George T. Morrow, Jr. Colonel George Pope was elected a director of the company.

**Rebuilding a Winton Branch**—The Philadelphia branch of the Winton Motor Carriage Co. at 246 North Broad street, is being entirely rebuilt and, pending the erection of the new plant, which the contractors have promised to have ready by March 1 next, temporary quarters have been fitted up in the building at the southwest corner of Broad and Race streets. The plans call for a two-story building, with a floor space of 25,000 square feet. The entire first floor will be used for show rooms

and offices, while the second floor will be devoted to the shop, stock and storage rooms.

**Tacoma Buying Cars**—The city of Tacoma, Wash., has appropriated \$5,000 for a motor hose wagon and \$2,500 for a car for the fire chief.

**Wants Warner to Time**—The Warner Instrument Co. has been requested to arrange, if possible, to time the races on the Los Angeles track with its automatic timing instrument.

**Washington Issues 5,000 Tags**—The records of the secretary of the state of Washington show nearly 5,000 motor car licenses have been issued and in a recent interview this official stated that he believed at least 1,000 machines are being operated without licenses.

**St. Louis Show Scheme**—The St. Louis show of February 14 to 21, inclusive, will be held in the National Guard armory. The hall contains 20,000 square feet of space on the main floor, as compared with 14,000 square feet in the new Coliseum, where it was first planned to give the show. In addition the armory has fourteen company rooms which will be utilized for the display of cars and accessories.

**Legislation For Overland**—The committee on public improvements of the Toledo city council has approved legislation which will throw the various tracts of land now occupied by the Overland company into one piece. The legislation vacates parts of Giant and Losier streets and an alley not now used by the public. The tract will then have a frontage of 663 feet on Central avenue, 860 feet on Yost street, and 918 feet in the rear. It is said that more buildings will be erected on this space by the Overland company.

**Pierce School Plans**—Plans for the school of instruction conducted every year by the Pierce-Arrow Motor Car Co. at Buffalo have just been announced. As has been the custom in former years the school will be conducted in classes of 2 weeks' duration and will be confined to three kinds of students, owners of Pierce-Arrow cars, drivers of Pierce-Arrow cars and dealers and repair men. It is probable that two class terms will be set aside for colored drivers, as has been the custom in former years. According to the present plans the school will open in Buffalo soon after the first of the year and a new class will be inaugurated every 2 weeks thereafter, through the spring. No fee is charged for the course of instruction, the only requisite being that the entrant be an owner, driver of or a dealer in Pierce-Arrow cars or a repair man, and in all cases those taking the course must bring with them a letter of identification from the dealer in whose territory they are located. The course for the various classes will differ somewhat in their character. Those for owners will contain more of driving instructions than the others, while

the courses for drivers will be taken up largely with a thorough foundation in the care and maintenance of the cars. The school will be in charge of the sales department of the company.

**Adamson Has Reo**—The Reo will hereafter be represented in Philadelphia by Prescott Adamson, at the northwest corner of Broad and Spring Garden streets. Mr. Adamson also handles the Columbia line in the Quaker City.

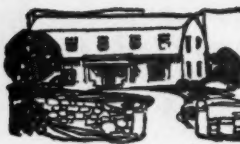
**Crow Company's Progress**—The Crow Motor Car Co., of Elkhart, Ind., which started with two or three men on its pay roll early in July, is now employing thirty-five men and shipping an average of one car per day. J. D. Hendrick, of Baton Rouge, La., has become associated with the company as secretary, it is announced by the Crow company.

**More Denver Prosperity**—The W. P. Carstarphen Electric Co., of Denver, has purchased two lots at 1220-24 Broadway and will erect thereon a two-story building to be devoted solely to the manufacture of electrical supplies. This building will adjoin the Hannan building recently completed for the Jackson agency, which marks the southern boundary of the Denver row.

**Shafer Sells Out**—W. A. Shafer, who was president of the Crown Motor Car Co., of Boston, has sold out his interests in the Hub and has gone west to go into business. The Crown company has been dissolved. The Crown company handled the Pullman, Glide and Crown cars in Boston. The Pullman has been taken on by the Hub Auto Co., but the Glide has not been placed. The Crown is a buggy type and it has been sold to Amesbury men, who are pushing its sale in the east.

**Patrol For Washington**—The first motor patrol wagon to be purchased by the police department of Washington, D. C., was put in service there last week. The machine is a Franklin. The car is of the conventional type and is the forerunner of a number of others that will be purchased in the near future. Now that the Washington police department has been fortunate enough to secure a motor patrol wagon after several years' agitation, the fire department of that city has renewed its request that motor fire engines be installed, and it looks as if the request would be granted.

**News From St. Louis**—Lee Chapman has been made manager of the Glide Motor Co., of St. Louis. J. L. McDonald, formerly with the Diamond Rubber Co., has taken the agency for the Knox car in St. Louis. The Von Arx Brothers Auto Co. has taken the agency for the Hart-Kraft delivery car. C. F. and J. R. Brown, who are handling the Peerless car in St. Louis, are having plans prepared for a handsome garage which building they will occupy exclusively. The Benjamin Gerdelman Mfg. Co. has acquired the agency for the Auto-Automatic windshield.



# News from the Motor Clubs



**Sims Is Chosen**—F. H. Sims has been selected assistant secretary of the Columbus Automobile Club, of Columbus, O., to succeed Mr. McIntire, who was compelled to relinquish the position because of a press of other business. Mr. Sims formerly was engaged in the sale of accessories.

**Signboarding No Easy Task**—The Portland Automobile Club, of Portland, Ore., has found it will be a big undertaking to have its members distribute the 1,000 signs along the various roadways leading from the city and has therefore engaged a number of laborers to erect the boards, whose work will be supervised by the members of the club.

**Favors a Bond Issue**—The report of the special committee of the Good Roads Association of Baltimore county, Md., favors a bond issue of \$1,500,000, extending over a period of 50 years, to be distributed equally among the fifteen election districts. It is shown that \$100,000 will be ample for each of these districts, with the state money already provided, to give Baltimore county a good and convenient system of public hard roads.

**Badgers Choose Officers**—At the annual meeting of the board of directors of the Wisconsin State Automobile Association the following general officers were elected for the ensuing year: President, M. C. Moore, Milwaukee; first vice-president, F. P. Hixon, LaCrosse; second vice-president, H. L. Halverson, Whitewater; treasurer, George A. West, Milwaukee; secretary, James T. Drought, Milwaukee; executive committee, A. B. Parker, Portage; C. W. Norris, Milwaukee; A. J. Horlick, Racine; George A. West, Milwaukee; James T. Drought, Milwaukee.

**Bay State Officers Chosen**—The annual meeting of the Massachusetts State Automobile Association was held last Thursday at the rooms of the Bay State A. A. in Boston. A. D. Converse, who filled the position of chairman of the legislative committee, presented a long report of what had been accomplished during the year in the way of motor legislation. Another report was also made by W. H. Chase, chairman of the good roads committee, in which he outlined what had been done in the way of constructing and repairing roads throughout the state. In his report Mr. Chase stated that the motor clubs throughout Massachusetts should get together and give more attention to this subject. Then followed the annual election of officers. A. D. Converse, of the Winchendon A. C., was chosen president; J. P. Coghlin, of the Worcester A. C., vice-president, and James Fortesque, secretary of

the Bay State club, was made secretary-treasurer. Secretary Sawyer, of Worcester, who held the position for the past year, declined a renomination. A vote of thanks was tendered to J. C. Kerrison, who for 4 years was treasurer of the association, and he was then elected unanimously a member of the organization.

**Law-Abiding Vermonters**—The Vermont Automobile Club held its annual meeting at Montpelier last week and the surprising fact was brought out that during the past year but six complaints had been made to the state authorities for violations of the motor laws. The club voted to purchase signs for the Vermont roads. W. W. Brown, of Springfield, was chosen president.

**Now a 3-Year-Old**—The third anniversary of the Automobile Club of Delaware county, Pa., was held last Wednesday night in Lansdowne, a suburb of Philadelphia. After a banquet President J. H. Weeks and the other officers read their reports. The membership now totals 410. The club, however, is not yet in a position to build its own home, the report of the committee showing that conditions at present are not such as to warrant the assuming of such heavy obligations as such an improvement will entail. The following officers were elected: J. H. Weeks, president; W. P. Anthony, vice-president; Dr. F. Marshall Harvey, secretary; J. E. Mitchell, treasurer. J. B. Calahan, 3d, Dr. C. H. Schaff and W. W. Hibbert were appointed on the law committee and Dr. Harry Gallagher, C. C. Dixon and William H. Worrell on the highway committee.

**Nearly 1,000 In Club**—At the last meeting of the board of governors of the Automobile Club of Philadelphia it was announced that the membership total had reached 955, and that at the present rate of growth the thousand mark would be passed before the first of next year. The success of the club's exhibit of signs, maps, road books, etc., at the recent national good roads convention was touched upon, as was the excellent work of the touring information committee in signboarding the roads around Philadelphia and issuing its comprehensive maps and road books. To this organization the stranger owes a debt of gratitude, for through its efforts the country roundabout the Quaker City is now an open book, where 2 years ago signs were few and far between. The system of road making in use by Chairman Griffith's committee has been adopted by not a few clubs in Pennsylvania, New Jersey, Delaware and other states, especially where through routes are concerned, and before many months it is hoped to have in place a comprehensive

and uniform set of distance, direction, danger and warning signs thoroughly marking the routes from Philadelphia to every large city within 200 miles. The clubhouse committee is still quietly working, and before many months will be in a position to lay before the club a plan which shall be sure of realization.

**New Officers Chosen**—The following officers were elected when the Lake County Automobile Club, of Ohio, was organized recently; E. L. House, president; E. D. Heartwell, vice-president; A. W. Colby, secretary and treasurer. The new club will attempt to secure better highways for Lake county.

**In Need of Clubhouse**—Allen Shelden, of Philadelphia, jarred the self-sufficiency of the Quaker City Motor Club at last week's meeting when he pointed to the fact that the club was living in a three-room flat, and urged that something should be immediately done to properly house an organization of such prominence in the motor world. While the present quarters, he said, are conveniently located and fairly well equipped, he felt the club should endeavor to live up to the reputation it had made as the promoter of the two successful long-distance races. To this, he averred, the first thing necessary is a clubhouse of its own, and he outlined his plans so convincingly that at the conclusion of his remarks President Berger was authorized to appoint a building committee. Mr. Shelden was appointed chairman.

**Motorists' Night at Buffalo**—The Automobile Club of Buffalo recently co-operated with the William street merchants of that city in making a brilliant success of a big business carnival. One of the special events of the carnival was motorists' night which was signaled by the holding of a motor car parade. Captain Peter J. Fischer was grand marshal of the parade. Behind him came a squad of mounted police and the Sixty-fifth regiment band. Three hundred handsomely-decorated motor cars were in the parade and the judges, selected from local newspapers, had a difficult time in selecting the winners. The decorations were topical even to the extent of showing the discovery of the north pole by Cook and Peary. The first prize went to D. H. Lewis, secretary of the club, whose car was decorated in the shape of a large sea shell, brilliantly illuminated with electric bulbs. Louis Engel captured second prize with his car that was profusely covered with electric lights, flags and bunting. Henry Michaels got third prize. His car was decorated to represent a boat and flags and electric bulbs of many colors hung from the masts and decks of the miniature boat.

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# Brief Business Announcements

**Omaha, Neb.**—The Electric Automobile Co., representative of the Packard, is preparing to enlarge its garage.

**St. Louis, Mo.**—A large addition is being built to the plant of the Moon Motor Car Co. at Second and Cornelia streets.

**Austin, Tex.**—Articles of incorporation have been filed by the Baker-Cameron Auto Co., of Dallas, with a capital stock of \$30,000.

**Jacksonville, Fla.**—The Jacksonville Motor Car Co., which was recently organized, is erecting a garage at Church and Clay streets.

**St. Louis, Mo.**—The Capen Motor Car Co. has given up the Apperson agency and in the future is to devote all its attention to the interests of the Locomobile.

**Atlanta, Ga.**—Herrmann J. Haas, who is the local representative of the Winton motor car and the Rauch & Lang electric, is now settled in his new home in the Masonic Temple.

**Detroit, Mich.**—The retail department of the J. B. McIntosh Co., agent for the Lambert, has been turned over to M. L. Hagle, who will retain the quarters at 199-201 Jefferson avenue.

**Kansas City, Mo.**—In the future the Flack Automobile Co. is to act as agent for the Baker, formerly represented by the Hunnewell company. The Flack company will continue its old quarters at 3816 Main street.

**Detroit, Mich.**—The Holland Automobile Mfg. Co., of Holland, has been incorporated with a capital stock of \$15,000. Articles of incorporation have been filed by the Cross Gear and Engine Co., of Detroit, which has a capital of \$20,000.

**Detroit, Mich.**—The Russell Wheel and Foundry Co. has just purchased the old plant of the A. P. Wagner tool works in North Detroit and is to go into the manufacture of motor cars. The new industry is to be started as soon as the necessary machinery is installed.

**Brooklyn, N. Y.**—C. T. Silver in the future is to act as Brooklyn agent for the Overland car. He is to have entire control of the business in both Kings and Queens counties. Mr. Silver has secured salesrooms at 62 Flatbush avenue. The new company is to be known as the Overland Motor Co. of Brooklyn.

**Birmingham, Ala.**—The Great Southern Automobile Co., which was recently organized with a capital stock of \$100,000, is now installing machinery in the building acquired for the factory on Third avenue, between Seventh and Eighth streets. E. F. Enslen is to be the president of the company; Ike Zedler, vice-president; J. J.

Keyser, secretary and treasurer, and E. F. Enslen, Jr., general manager. The company is to make motor cars.

**Houston, Tex.**—Work is being rushed on the erection of the new garage for the Parmele-Wroe Automobile Co.

**El Paso, Tex.**—The Mosehart & Keller Co., of Houston, has established a branch agency for the Haynes in this city.

**Cleveland, O.**—The Barger Auto Co., local agent for the Cadillac, has leased the entire first floor of the new Skeel building on Euclid avenue, opposite East Seventeenth street.

**Detroit, Mich.**—A change in the local motor field has been the organization of the Overland Sales Co., of 295 Jefferson avenue. This concern is to act as agent for the Overland.

**Atlanta, Ga.**—The Corker Motor Car Co., recently organized, has acquired quarters at Fairlie and James streets, and will take possession at once. The company will represent the Haynes and Matheson.

**Omaha, Neb.**—The Standard Automobile Co., of St. Louis, is considering the establishment of an agency here and has purchased a site on Farnum street. This concern is the agent for the Standard and National.

**Omaha, Neb.**—The Sweet-Edwards Automobile Co. has been organized, with Ernest Sweet and George Edwards as members, and is to act as local agent for the Moon and American, both of which are newcomers in this city. A new building is to

be built on Farnum street and the company expects to start business by December 1.

**Augusta, Ga.**—A charter has been granted to the Augusta Garage Co., which is backed by residents of this city.

**Austin, Tex.**—The South Texas Automobile Agency, of Falls City, has increased its capital stock from \$3,000 to \$35,000.

**St. Louis, Mo.**—The Bagnell Co., which is the local agent for the Cadillac, has removed to its new salesrooms at 4160 Olive street.

**Pittsburg, Pa.**—The Standard Automobile Co. has just granted a contract to D. A. Dyche for the erection of a garage at Grant boulevard and Craig street, at a cost of \$75,000.

**Boston, Mass.**—H. C. Henderson, who for the past several years has been connected with the E. R. Thomas Motor Co., of Buffalo, N. Y., has joined the selling force of the Boston branch of this company.

**Houston, Tex.**—The Automobile and Motor Boat Co. has been appointed agent for the Franklin in the southern part of the state and is preparing to start an aggressive campaign in the interests of the new car.

**Utica, N. Y.**—Harry A. Davis and Whitney A. Clark have formed a partnership and will go into the motor car business. They have leased quarters at 12 West street and will represent the Oldsmobile and will also conduct a garage. They will cover both Oneida and Herkimer counties.

**Spokane, Wash.**—Harry G. Bell, formerly connected with the Bennett garage, has been appointed local manager for the Metropolitan Motor Car Co., of Seattle, and will at once commence work on the erection of a new garage, to be located on West Riverside avenue. The company will act as agent for the Acme and Pullman.

**Denver, Col.**—The Krebs-Covington Co. has opened headquarters at 1620 Broadway and will represent the Haynes and the Detroit electric. Another new concern is the Brown-Bailey Co., of 1460 Cleveland place, which is to make a specialty of supplies. H. R. Brown and J. H. Bailey are the members of the new company.

**Detroit, Mich.**—The Russell Motor Axle Co., has just been organized as an adjunct of the Russell Wheel and Foundry Co. and will engage in the manufacture of axles and bevel gears. The company has a capital stock of \$100,000, and A. W. Russell is to be president; W. A. Russell, vice-president, and G. R. Russell, secretary-treasurer.



**Jersey City, N. J.**—Westchester Appliance Co., capital stock \$2,000; to manufacture motor cars and other vehicles. Incorporators, H. O. Coughlan, J. B. Turner and S. A. Anderson.

**Elizabeth, N. J.**—Mono Motor Car Co., capital stock \$300,000; to manufacture motor cars, motor boats, aeroplanes, etc. Incorporators, William J. Wood, H. T. Eaton and C. Roberts.

**Chicago**—Scott Governor Spring Co., capital stock \$25,000; to engage in the manufacture of metal goods, motor cars and accessories. Incorporators, G. N. Scott, F. Hanning, and A. Stubblefield.

**Dallas, Tex.**—Roberts Motor Car Co., capital stock \$10,000; Incorporators, M. C. Roberts, B. M. Lindsay and Walter Lochner, all of Dallas.

**San Antonio, Tex.**—Texas Motor Car Co., capital stock \$10,000. Incorporators, F. A. Hornady, A. J. Bell and H. T. Hansford.

**Chicago**—Globe Power Co., capital stock \$20,000; to manufacture and deal in machinery of all kinds, establish garages, and deal in supplies incidental to its other business, in addition to publishing text books. Incorporators, G. C. MacArthur, A. Sheldon, and E. J. Stanley.

**Augusta, Me.**—Buick Auto Supply and Garage Co., capital stock \$100,000; to do a general motor car business. E. M. Leavitt is to act as president and treasurer of the company.



# Development Briefs

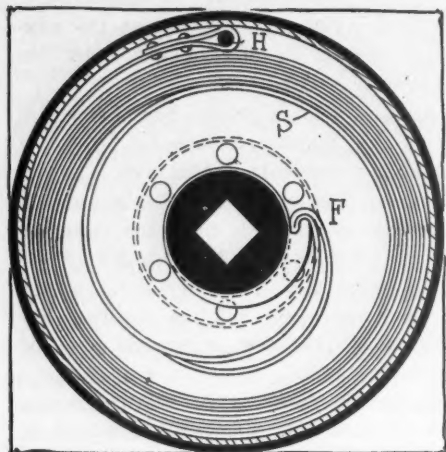


FIG. 1—SPRING GARDNER STARTER

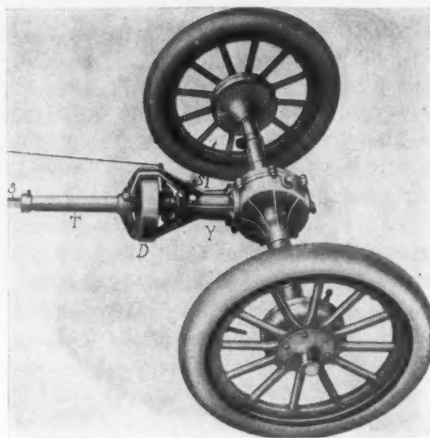


FIG. 2—SCHEME GARDNER STARTER

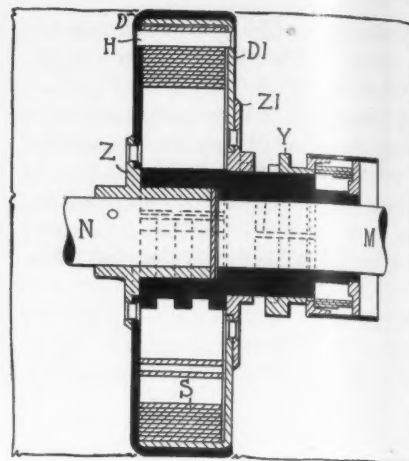


FIG. 3—SECTION GARDNER STARTER

## GARDNER ENGINE STARTER

THE Gardner Engine Starter Co., of Chicago, is manufacturing a spring self-starter for motor cars, the general scheme of which is shown in Fig. 2, in which D is a drum within which is incorporated a wound-up spring, so that when it is released and with the transmission in direct drive the motor is started through the propellershaft S and through the transmission and clutch. In order to use a starter of this nature, which is located immediately in front of the rear axle on some types of cars, the propellershaft S has to be divided, one part S connecting from the self-starter to the transmission, and another part, S1, not illustrated, extending from the self-starter back to the differential. Between these two parts of the shaft is a clutching device. The starting spring is located in the drum D and the change necessary in the driving system of a car is that a neck Y is secured to the differential and has expanding arms for encircling the drum D. Forward from the yoke a torsion tube T surrounds the propellershaft. The assembly of this self-starter is shown in Fig. 4 where D and D1 are the halves of the drum in which is contained the spring S, the end E of this spring fitting over a pin at the point H in the drum. The other end of the spring F has a hook whereby it can be gripped by a series of teeth C which are on the end of the shaft connecting with the differential and rear axle. Y is half of the clutch member and fits over the squared end Y1 of the carrier C, and Z1 is the corresponding clutch of this member which bolts to the rear face of the drum D1. The detail assembly appears in the sectional drawings, Figs. 1 and 3, this showing how the drums D and D1 are pressed together with the spring S wound up within them and anchored to the drums by the pin H. M is the driveshaft to the rear axle and N to the transmission. The

flange Z is bolted to the front drum, having a squared fit for the propellershaft N and one-half of the clutch Z1 bolts to the rear face of the drum D. Y is the sliding member of the clutch and serves to lock the parts N and M of the propellershaft together. Fig. 1 shows how the inner end F of the spring is hooked to engage with the carrier teeth C. To start an engine with this self-starter the change-speed lever is first put in direct or high position, and the spark and throttle set at the starting points. The clutches Y and Z1, Fig. 3, are already engaged, but the releasing of these, however, immediately frees the spring and the drums D and D1 are with the shaft N rotated several times, starting the motor. As soon as the motor is started the transmission is changed to neutral, the clutches Y and Z1 are engaged and the spring can be rewound with the engine.

## FOSTER MAKING NEW HORN

A multiple horn, which is a real musical novelty, capable of being manipulated by any motorist, has just been perfected by Claude Foster, of the Gabriel Horn Co., of Cleveland. The new horn is a compact

grouping of ten tubes, readily attachable to the side of the car and occupying little room. These tubes include the octave of G with the addition of A and F sharps. A wide range of music may be gotten out of this, by anyone capable of playing the piano or organ, by manipulation of a keyboard placed within reach of the driver or an occupant of the rear seat. By far the most popular feature, however, is a small winding crank lever at the side of the keyboard by which, alternately, three sets of cams may be turned up to open the notes producing the dominant, the sub-dominant and the tonic chords, which are then produced at the selection of the operator whenever the pedal is used to throw the exhaust into the horn. This small lever may be turned at any speed in either direction by one hand of the driver, selecting either chord or rapidly combining them in any order of selection, and become a musical alarm of attractive tones. The lever is kept at neutral while the keyboard is to be used for independent composition. Only the first instrument has been completed as yet.

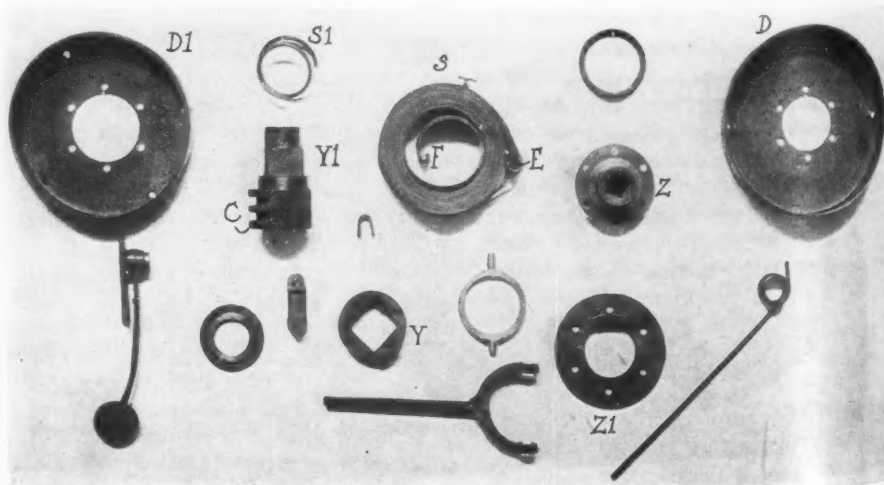


FIG. 4—ASSEMBLY GARDNER SELF-STARTER